

# OS/2

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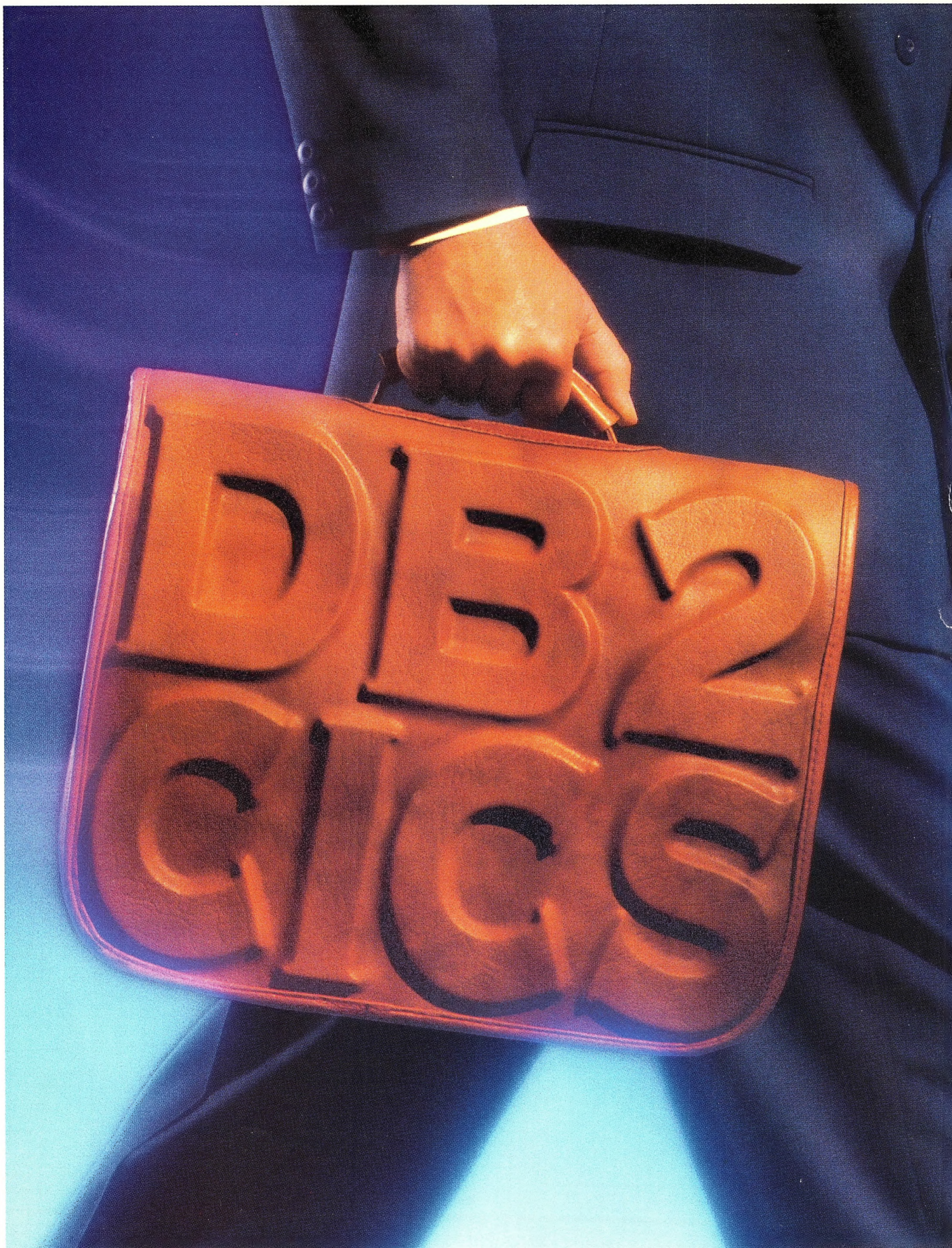
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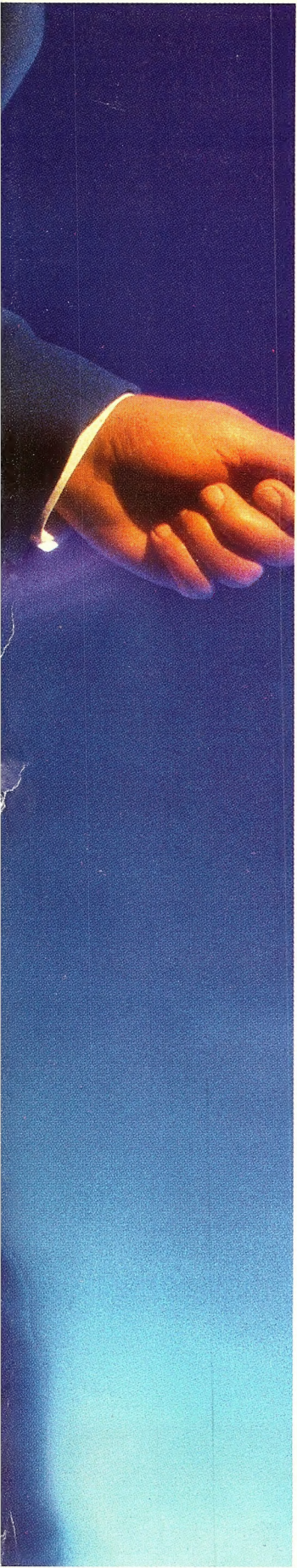






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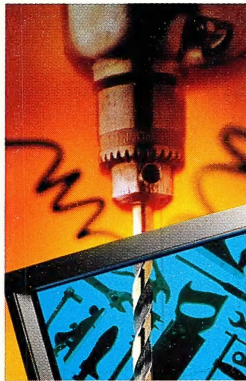
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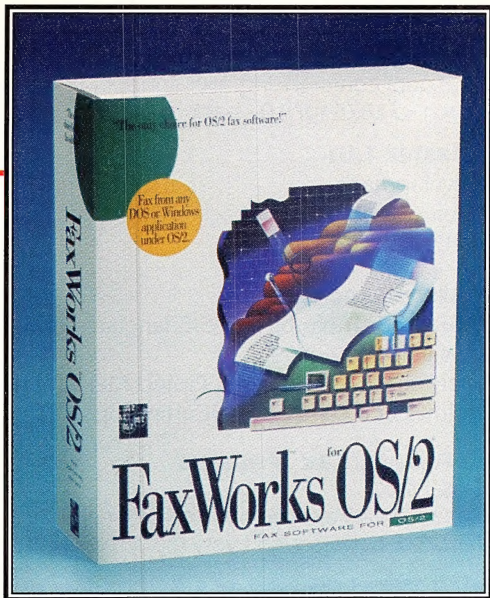
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# Perspectives

## United We Stand, Divided We Fall

**O**S/2's success is due to its strength as the most powerful, benefit-laden operating system available. In the future, it must continue evolving as a no-holds-barred high-performance 32-bit operating system, and yet become even more accessible to everybody with at least a minimal hardware base. I tried to explain that viewpoint in my May *Perspectives*, ("Who Needs OS/2, Anyway?," p. 7) but unfortunately, some readers thought I was saying that OS/2 isn't good for individuals, that a 4MB RAM version of OS/2 is undesirable, and that *OS/2 Magazine* doesn't care about individual OS/2 users. So, to set the record straight:

**OS/2 is an excellent operating system for most PC users.** OS/2's hardware requirements aren't much greater, in many cases, than the average new PC configuration being sold through retail stores or mail-order distributors. Many end-users who push the limits of older operating systems can take advantage of all those big and little things that make OS/2 and the Workplace Shell such a pleasure to use.

My point? IBM should focus on making OS/2 more accessible to consumers by addressing consumer concerns, rather than by coming up with vague new marketing slogans. The best marketing tool for OS/2 will be a better, cleaner, and safer installation procedure. Let's get more third-party device drivers out there, especially for those older video boards, CD-ROM drives, and other peripherals that many DOS and Windows users already own and can't justify replacing. And maybe a little more visible success at encouraging systems builders to pre-load and *promote* pre-loading

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OS/2 will go a long way to easing some consumers' misgivings.

A 4MB RAM version of OS/2 would not only be great, but is long overdue. In May, I said that IBM shouldn't develop an "OS/2 Lite," which I mentally defined as a version of OS/2 with less functionality than OS/2 2.1. Alas, many of you, thought I was saying that a 4MB RAM version was unnecessary. That's not what I meant.

I'm as anxious as you are to see the full OS/2 2.x

become more memory-efficient, as long as there's no accompanying sacrifice of functionality. Memory is expensive, and not every potential OS/2 user can afford to add more RAM. In the enterprise, lowering minimum hardware requirements will allow companies to roll out OS/2 faster and less expensively. Lowered memory requirements will enable many PC systems builders to bundle OS/2 with their computers. Even users with far more than 8MB RAM can benefit from a leaner OS/2.

On the other hand, I'd hate to see IBM's programmers save memory at the expense of peer-to-peer networking, by reducing the maximum number of simultaneous threads, or by removing installable file-system hooks. Can't happen? Well, executives from IBM's Personal Software Products division imply that we'll soon see several parallel versions of OS/2, with at least two different OS/2 kernels. There's the "small office/home office/game player" OS/2 that offers a one-button install program and runs in 4MB RAM but has reduced performance. A fully featured version should replace OS/2 2.1; I've heard conflicting

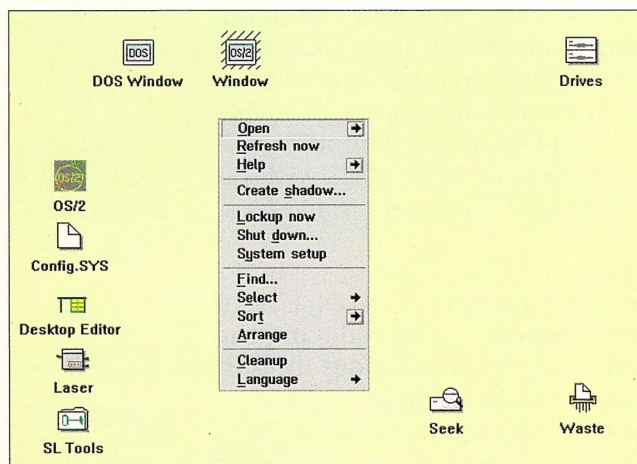
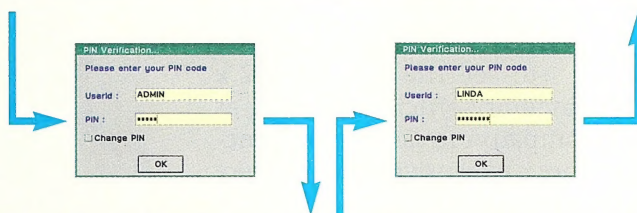
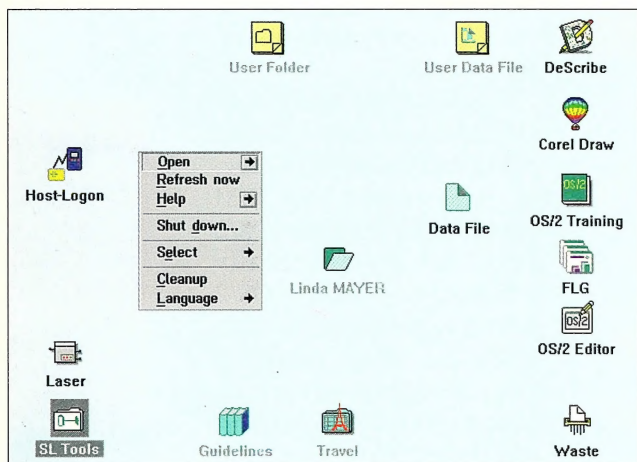




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### Highlights

- User specific, dynamic adjustment of
  - WPS configuration
  - Pop-up menu content
  - available applications
  - diskette usage
  - user data folder
- easy to use administrator tools for LAN and host environment
- SOM-based user profile management
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reports as to whether this version will run in 4MB RAM. Then, there's the version that supports symmetric multiprocessing (SMP). And maybe even more specialized versions are forthcoming.

This approach is bad for several reasons. First, a proliferation of OS/2 versions will confuse OS/2 buyers, dealers, and developers, provide fuel to its detractors, and possibly slow OS/2's momentum. Second, many developers will design their products to support the lowest-common-denominator version—and that means that the more advanced operating systems (the ones millions of buyers have embraced as full-featured OS/2 2.x) might wither on the vine. Third, everyone will have to deal with inevitable incompatibilities between OS/2 versions. Fourth, it's a flawed assumption that home users are less sophisticated, or less demanding, than corporate users.

(IBM officials have attempted to assure me that there won't be incompatibilities because all OS/2 versions will share a common code base but, frankly, I have my doubts about how long *that* will last. Hey, users are already reporting incompatibilities between OS/2 2.1 and OS/2 for Windows.)

IBM's mission should be to strengthen OS/2, not break it up. Give the next version all the functionality, and make it run in 4MB RAM. It can be done. If some components, such as SMP support, will initially appeal only to a few OS/2 users, make them external modules, like MMPM/2, or as add-in products, like Communications Manager/2. But let's not see OS/2 turn into Windows/Windows for Workgroups/Windows NT/Chicago/Daytona/ Cairo/ or who knows what.

OS/2 Magazine is here to support all OS/2 users, whether

you're in an enterprise setting or not. Yes, many of our articles, such as our series on NetWare or this month's feature on CID, will be of primary interest to people using or supporting OS/2 within a business. But a good part of each issue will be applicable to everyone using OS/2, like this month's article on the Enhanced Editor or Dave Reich's Tips & Tricks column.

OS/2 users are deeply committed to the future success of their operating system—that loyalty came through loud-and-clear in your comments about May's *Perspectives*. Thank you for reading and responding, and for caring about OS/2 and OS/2 Magazine.

*Alan Zeichick*

Alan Zeichick  
Editor-in-chief

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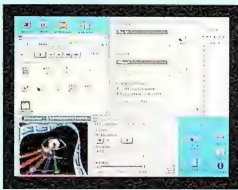


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# Letters

## 32 bits buys an advantage

Dear Editor:

In Amy Wohl's article, "What does 32-bits buy?" (March 1994, pp. 13-14), she states: "WordPerfect decided not to ship the new version of its OS/2 product" and added that OS/2 users will lose as a result. That may be true, to a certain extent, but WordPerfect will likely be the biggest loser. Lotus, DeScribe, and, of course, Microsoft will be the winner. Workplace OS is not too far from shipping, and anyone with a Workplace Shell application is just a little more than a recompile away from tapping that market. AmiPro will, very likely, come up with a Workplace OS version, but the same cannot be said for WordPerfect.

The word is that the next version of Windows will be much more object oriented, making it closer to OS/2 than Windows NT. Microsoft will have an advantage, as the developers of the OS, but Lotus will have a bigger advantage, having experienced programmers and a several-year head start in writing multi-threaded object-oriented applications. Once again, WordPerfect will be the loser, having no experience at all.

Personally, I don't see much of a future for WordPerfect. They'll be playing a losing game of catch-up to Microsoft with their Windows version, and won't even be in the game with OS/2 and Workplace OS. It might be just as well that they don't clutter up the OS/2 market with yet another single-threaded hack.

David Wright

Dear Editor:

After reading the May issue of *OS/2 Magazine*, I came across some inaccuracies I would like to point out.

In Rick Meigs' "Mysteries of the *config.sys*" (May 1994 pp. 47-53), under the "No Shell" section, the sentence that states "Without Workplace Shell, you will not be able to run any Presentation Manager (PM)-specific programs..." is untrue. Even if you replace the Workplace Shell with *cmd.exe*, as shown in the article's example, PM programs run fine. You can't click on an icon to run them, but if you enter the program's name from the OS/2 prompt, the PM program will execute.

I have a couple of other answers to the questions in David Reich's Tips & Tricks column ("Software Problems with Hardware," pp. 82-84). Regarding the question on dongles; changing the IOPL parameter to "yes" in your *config.sys* will help some programs that use dongles to work properly. And, in response to the question regarding the laptop LAN, I have seen the same error messages on my laptop. I solved the problem by placing the parameter **pauseonerror=no** in my *config.sys* file. Granted, if a true error occurs, my system won't pause; however, since I set the parameter to no only after I finish testing any changes to my system, I have never run into any problems with it.

Dwight Martin  
via CompuServe

You are correct. Running with *cmd.exe* in your *config.sys* as the **runworkplace** variable will indeed allow you to run Presentation Manager programs. As you point out, you must start them from the command line by typing their name. However, you should be warned of

some problems that may arise as a result.

- You must use the **start** command when starting any program, otherwise you will only be able to run one application at a time (PM or otherwise), since you have no shell support to start other command prompts.
- You cannot switch to a program on demand. That is to say that you must <Alt+Esc> through all of your running programs to get to the desired one.
- Other than *config.sys*, you have no system configuration support. For example, you might be able to print, but you will have no interface to the print subsystem. You will have no font or color palettes or any other system configuration tools afforded you by the Workplace Shell.

So, yes, you can run PM apps without the Workplace Shell, but in a restricted fashion.

As for the **iopl=yes** in regard to dongles, in general, the Shared Access check box is more effective and helps in the majority of cases where dongles are not working. Although **iopl=yes** may help, it is not a good idea to leave it set to yes unless you know for sure you need it, as it will allow any application to execute some restricted direct-hardware function calls.

As for **pauseonerror=no** in the *config.sys* file for the occasional laptop user, you are correct. I have found some other settings that help in specific situations and will be updating this information in a future issue.

David Reich



# Another

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# New drivers for old problems

**MWAVE AND NETWARE DRIVER WATCH** BY ALEXANDER ANTONIADES



One of the latest technologies being talked about is the Digital Signal Processing (DSP) chip. The industry journals are touting DSP chips as the herald of a new age of computing, the likes of which has only been seen in AT&T commercials.

DSP chips are special-purpose CPUs used to translate analog information into digital information a computer can process. The argument for putting a DSP chip in your computer is that, as software technology improves and new communication standards arise, you'll be able to instruct your computer to digest the analog information it receives—in a new way. So you can buy a device today that will be software-upgradable to new standards, such as the upcoming V.fast modem protocol or color fax.

Part of what people are counting on to make such communication possible is a piece of technology from IBM called Mwave that acts as an interface between the operating system and different DSP chips. Any application that needs to use a DSP to process data only has to talk to Mwave, instead of having to write a different set of commands for every chipset.

Mwave cards are starting to make their way into the marketplace and a few have already been released from IBM and Best Data. These cards are, for the most part, being marketed as faxmodems with soundcards built in, but some of the cards also in-

clude CD-ROM drive interfaces.

The only problem, as usual, are the OS/2 drivers. Vendors currently only offer Windows drivers for most Mwave functions, but these Windows virtual device drivers will not work under OS/2. The good news is that IBM officials have hinted that Mwave will be more integrated into OS/2 in future releases.

Ideally, once all of the Mwave drivers are finished, they should work with any Mwave board. But the non-standard standard is the oxymoron we live with in the computer industry, so don't buy one of these cards until you can hold the driver disks in your hand.

## NetWare and OS/2 part deux

The marriage between OS/2 2.x and Novell's OS/2 Requester 2.01 could best be described as a shotgun wedding. Both companies compete with each other in the server software arena and, to a lesser extent, in the operating system arena. But, as IBM sought to sell OS/2 outside the confines of the Big Blue shop, they discovered that NetWare connectivity was more important to corporate America than they had previously realized. As a result of this discovery and Novell's squabbles with another major operating system vendor, both companies found it in their best interest to cooperate with each other to work things out.

Since the OS/2-NetWare connectivity bugs, embarrassingly enough, came from both products,

IBM and Novell each agreed to fix their own. IBM's fixes came in the form of the 2.11 Service Release and Novell's fixes have arrived with version 2.1 of the NetWare Requester.

The NetWare Requester 2.1 includes some new features, but mostly it squashes bugs. Of the new features, RPL support allows remote installation of the requester and the requester documentation is included on-line in .inf format. The areas that received the most attention from bug squashers (because they needed it) included virtual DOS and Enhanced mode Win-OS/2 support and named pipe support. One of the biggest improvements in this release is the installation program, which will now help configure multiple network protocols.

Assuming all of these problems are fixed, what's next? The only technical obstacle remaining is NDS (Novell Directory Services) access under Win-OS/2 and Virtual DOS. According to Novell, the current OS/2 code doesn't allow it. But if enough people complain about it in this era of IBM-Novell detente, that too will probably be fixed.

The NetWare Requester 2.1 works with all versions of 2.x, although the 2.11 Service Release is recommended. The requester and on-line documentation can be downloaded via NetWare. In addition, the requester files are available via the Internet at <ftp.cdrom.com> and should be on the next release of the Hobbes CD-ROM.



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# What is Office Automation now?

THINGS CHANGE, BUT THE GOAL REMAINS THE SAME. BY AMY D. WOHL



**T**he term Office Automation has been making its way around front-office (as opposed to data-processing) departments since the mid-1950s, shortly after the initial commercialization of computers. At first, Office Automation was perceived as a way to replace low-level clerical workers with shiny, efficient, and cheaper machines—a theme song that has been sung as a kind of Office Automation chorus, repeated at intervals. As the computers evolved, office work and office workers changed, and we struggled to work more efficiently.

In the mid-1960s, secretarial work began to change significantly through the invention and marketing of word-processing, but no one seemed to refer to it as Office Automation. The emphasis was similar to those first clerical-focused efforts—change the work to fit what the machines can do, make the people learn the machines, and justify everything on the basis of replacing expensive (and unreliable) human labor with cheap (!?) and consistent computer-mediated output.

The word-processing of the 1960s and 1970s changed the relationship between bosses and secretaries; it made some secretaries into new kinds of professionals and a few into supervisors and programmers. Some escaped the secretarial

ghetto forever, but given the changing times and changing attitudes towards work and women, it may have happened anyway. But this (pre-PC) word-processing frenzy that probably affected, at most, two or three million people was still separate from the rest of office work. People still filed on paper, distributed on paper, and sent paper telephone message slips around organizations.

In the early 1980s, the term Office Automation surfaced again. This time, it was used to describe a set of computer-based technologies that were being used in an integrated way to support professional and administrative office work. New terms like electronic mail and calendaring then entered the vocabulary.

We had great visions and splendid intentions, but it was hard to justify building an entire infrastructure based on the relatively small amounts of information collected on how this relatively large investment (perhaps \$35,000 per user or more) might be balanced against cost savings or increases in revenue.

A few firms invested in small pilots to test the technology; others were more aggressive, but it took the advent of the explosive growth of the personal computer market during the mid to late 1980s to provide a serendipitous infrastructure against which office automation—now sometimes

called workgroup computing or groupware—could be viewed as an easily justified incremental and highly leveraged cost.

Now we do our office computing, not in isolation, but as members of multiple networks and relationships. The term Office Automation seems quaint or obsolete, hinting at mini-computers and mainframes, instead of the PC-based architectures preferred today. But on reflection, it seems familiar without being particularly enlightening.

For more than 10 years, users have greeted me at conferences and airport lounges challenging me to find a new name for Office Automation. The analysts who follow this industry sector have certainly tried.

Office Information Systems seems a promising term, but we keep adding technologies that are used in the data-processing department as well as the office.

The French consultant Louis Nauges coined the term (copyrighted to him, but loaned to his language) *Bureautique*, by which Office Automation is known in France.

Groupware was a popular term for some time, but that popularity is now waning, perhaps through overuse. It has a precise meaning, software to support the cooperation, coordination, scheduling, and negotiation of the work done together in groups, which is only part of Office Automation. In the



office, we sometimes work together and sometimes work alone. A perfect name would reflect that.

Informatique has been proposed by some, especially users in the health care professions. But it seems to have a lot to do with content and perhaps not enough to do with process. We need to consider both.

So, what is Office Automation in 1994? A collection of tools used to support office work that might be obtained by buying a set of integrated tools from a single vendor or, more likely, by mixing and matching tools from many vendors and binding them together in a preferred de facto standard computing environment, such as OS/2, Windows, Unix, Macintosh, NT, or a combination.

Today, that assortment would probably include e-mail, word-processing, calendar and scheduling, and file sharing. But it's likely

to include tools for creating custom interfaces and applications, a shared workspace for collaboration, support for remote users and a virtual office facility, group databases (including document databases), document management, and work flow processing. And that's just today's list!

That's probably the point. An appropriate name for Office Automation is not only elusive (because exactly what we do in offices and what we want for support changes over time), but the combination of tools that might be available and the ways we can combine them is constantly changing. Who would have imagined Apple putting DOS on a Macintosh or Microsoft's Windows on a Sun Unix machine?

Another important element has also changed. Since much of the early focus in office automation was on cost savings, you had to be able to show you could save more

money than you spent. Often, these savings were more illusory than real, but the need for counting beans was viewed as a requirement to making investments already seen as risky, since they rested on new technology.

We are now seeing a different attitude. Customers are viewing investments in office technology as a normal aspect of doing business, a part of the normal overhead expense. Customers don't even ask for cost justifications for individual PCs any more. We don't cost-justify desks and chairs, do we? We do need to see the cost of an appropriate level of office information infrastructure built into our overhead structure and reviewed and adjusted on an annual basis.

We can no longer do business without our electronic tools and we can't do business without the connections that turn the people and the tools into an office system that's capable of solving problems and creating new products and services. An office automation system is named based on whatever tools happen to be included this year.

For OS/2 users, Lotus has been an important ally. Not only is it the most important groupware product (Notes has been, from the start, based on an OS/2 server), but Lotus is the only vendor to offer an OS/2 office suite. While office suites are sets of individual user tools, instead of group tools, we have high hopes that the grandchildren of these combinations of word-processing, spreadsheets, databases, graphics and presentation tools, and e-mail will grow up, in their client/server future, into the office automation enablers we dreamed of years ago.

---

*Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end-user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.*

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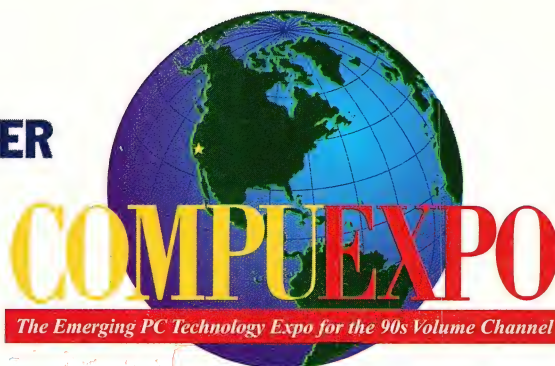
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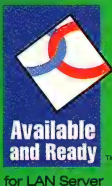
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# QwikSwitch 32 and AMOS

**HOT KEYS AND HPFS ACCESS** BY BRIAN PROFFITT

**S**ome of us never learn. The Workplace Shell has (largely) liberated us from the days of having to remember convoluted directory trees and having to drill down four or five levels to find the subdirectory we needed. So, what do we do? We put folders within folders, so we go through the same drill-down process graphically, and fill the desktop with open folders. This is just one of the problems QwikSwitch solves.

## Hot key program activation

With QwikSwitch, you can activate up to 72 different programs by using unique hot-key combinations. You don't have to worry about which folder the program is in, or how deeply nested that folder might be.

For example, no matter what is showing on your desktop, pressing <Ctrl+Shift+W> will bring up an OS/2 command window. That's a lot easier than opening the OS/2 System folder, opening the Command Prompts folder, and finally, opening the command window. If a command window is already open, the hot key switches to it, if not, it will open a new one. Of course, all keys can be assigned to any program you like.

One problem with QwikSwitch is that it works by intercepting (called "hooking") the input keys before they are passed to your application. Unfortunately, OS/2

**You can  
activate up to 72  
different programs  
by using unique hot-  
key combinations.**

bypasses that input hook if the keys have been defined by the application as accelerator keys. Worse, this mechanism interprets a <Ctrl+Alt> combination as if the <Ctrl> key hadn't been pressed. In other words, if your application has defined <Alt+F> as an accelerator to open the File menu, QwikSwitch won't receive <Ctrl+Alt+F> hot keys when you are in that application, unless they are pressed twice.

Realistically, this cuts the number of available hot keys in half to include only the <Ctrl+Shift> combinations. That's not a major problem, however, since you aren't likely to remember more than 40 different key combinations anyway.

QwikSwitch isn't just for OS/2 programs. You can QwikSwitch to Windows and DOS sessions as well. QwikSwitch will use the specific DOS and Windows settings defined for each of those sessions, automatically.

In fact, QwikSwitch isn't just for starting programs; you can use hot keys to open folders, lock up the system, or perform a shutdown. You should note, however, that whenever the system is locked up, whether by QwikSwitch or by OS/2's normal security features, QwikSwitch will be disabled. You must re-enable it with a <Ctrl+Shift+keypad(+)> to use hot keys again. If you frequently leave your system idle and use OS/2's timed lockup facility, re-enabling can become somewhat annoying.

## Great for Notebooks

A more subtle benefit awaits those who use notebook computers. Many times, you can't or don't want to bother using a mouse with a notebook computer. Maneuvering through multiple applications and folders without a pointing device can be a painful process. QwikSwitch streamlines the process. Of course, you can go even further and do without the hot keys.

QwikSwitch includes a QwikTalk module, which works with IBM's Continuous Speech Series (ICSS). If you're running ICSS on your system, QwikTalk can recognize 75 spoken commands and switch to the program when you speak its name. The commands are generic words like "word-processor" and "mail," as well as more specific words like "OS/2 window" and of course, "solitaire."

This feature is especially useful for the physically challenged, but pro-



vides some drawbacks. First, listening for speech takes up a lot of system resources. You can expect your system to slow down. However, QwikTalk disables the microphone if it doesn't detect commands in a specified period of time. You can configure that time lag, but for performance you will probably keep it at the minimum 20 seconds so that your system isn't impaired while you go about your normal work.

You do, however, have to press <Ctrl+Space> to reactivate the microphone when you want to use it again. Pressing keys so that you can use a microphone doesn't seem like a major productivity improvement.

### Glee or Flee

Setting QwikSwitch up isn't terribly difficult, but it isn't trivial either. Novices may want to stay away (although the corporate MIS staff may want to take advantage of QwikSwitch as a way to standardize program selection methods for novices).

It may seem somewhat strange to use a keystroke-based product with a graphical user interface like the Workplace Shell. I think it's best to be as productive as possible, by whatever means required. Users with a lot of programs and/or a small desktop will find that QwikSwitch enhances the Workplace Shell by providing a smooth new navigation technique.

### AMOS 1.2

Nobody argues the fact that OS/2's High Performance File System (HPFS) runs faster than the File Allocation Table (FAT) file system and even the Super FAT system in OS/2 2.1. HPFS is more resistant to the fragmentation problems that slowly erode the performance of FAT partitions over time and it removes the 8.3 character limitation on file names. It's clearly easier to locate a document named *Product Info - Jefferson Corp.*, than

**AMOS has  
some restrictions, but  
what it does offer is  
extremely valuable.**

one named *jeffrson.wp*. So, why isn't everyone using HPFS? Probably because HPFS partitions cannot be accessed from DOS—or can they?

AMOS, one of the most valuable OS/2 shareware offerings, helps bridge the gap. It runs under DOS and provides limited access to HPFS partitions. AMOS has some restrictions, but what it does offer is extremely valuable.

### What it Does

AMOS acts as a command shell that runs under DOS. It loads directly from a DOS command line and displays its own command prompt. It can also run a command immediately upon starting and before going into prompt mode. Another parameter instructs AMOS to run the indicated command and exit back to the DOS prompt immediately.

When you use the AMOS shell, you can read, write to, and even manipulate HPFS partitions (indicated only as invalid drives outside the shell) more simply than under OS/2. For example, if your computer is re-booted without having shut down OS/2 properly, when you restart, OS/2 automatically runs the CHKDSK program to check file allocations, extended attributes, and other aspects of your fixed disk structure. How does it know to run this action? When the system starts, it raises a flag indicating that the disk structure has been changed since the last shutdown. The disk is, therefore, "dirty." During shut-

down, when the disk buffers are all written and all files are closed, the dirty flag is lowered.

If, at the beginning of the boot process, OS/2 sees the dirty flag, it knows shutdown wasn't completed and that a CHKDSK will be required. On large disks containing many files, the CHKDSK process can take a long time. There might be circumstances under which you might want to avoid such a delay. AMOS provides an easy way to do that. Boot DOS from disk, enter the AMOS shell, and execute the AMOS command **dirty c: off**—even if your c: drive is formatted for HPFS. This technique can be helpful, but it can also be risky. I wouldn't recommend it in all situations—after all, OS/2 runs CHKDSK to find and fix errors.

You can execute a variety of other commands with AMOS, including file copy and delete and drive free space analysis. You can even access extended attributes directly.

### What it doesn't do

AMOS only allows you to run its commands. You cannot run DOS programs. It won't let you run programs, such as the Norton Utilities, against HPFS files. If you want to do so, you will need to use the Gamma-Tech utilities. Allan Mertner, the author of AMOS, is working on a device driver version that will allow normal DOS to execute against HPFS files (but don't expect Norton or Central Point utilities to work on HPFS—they're fundamentally different). The current version is limited to 23 internal commands. If you want to modify an HPFS file directly, you can only run the AMOS editor, which is limited to 2,000-line files.

### The limits don't matter

AMOS is designed to help when problems arise. It isn't intended as a product for long-term constant use of HPFS files by native DOS. The DOS sessions that run while OS/2 is operating can access HPFS



partitions just fine—you don't need native DOS for that. As long as you limit your file names to the 8.3 convention, your DOS programs can access HPFS data without any problems under OS/2.

AMOS is especially useful when a problem occurs. Say, for example, you modified your *config.sys* file in a way that prevented OS/2 from booting. To correct this problem using OS/2, you would have to boot from the installation disk and disk 1. Then, to modify *config.sys*, you would have to use an editor that didn't require Presentation Manager or the Workplace Shell. No such editor is included with OS/2, and users usually revert to shareware products or, more often, just boot from a DOS disk and use a DOS editor.

The DOS solution doesn't work on an HPFS partition, however—or at least it didn't before AMOS. AMOS's 2,000 line limitation doesn't sound so bad when you

consider that its main purpose is to fix the configuration file.

### Glee or Flee

The real benefit of AMOS isn't its 23 internal commands, but the confidence it gives people to convert to HPFS. For \$31 you can be assured of the ability to access your HPFS files—even if you happen to trash OS/2. I could argue that you could accomplish this without AMOS, since OS/2-DOS sessions can access HPFS and small character-based editors are widely available as freeware. But, for many, AMOS is exactly what they need to convince them that it's safe to move to HPFS. \$31 will buy the least expensive system performance boost you have ever purchased.

*Brian Proffit has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the presi-*

*dent of Visionary Research. Brian is the author of two books on OS/2, is a contributing editor for OS/2 Developer and OS/2 Magazine. He can be reached on CompuServe at 75300,1466, or Internet 75300.1466@compuserve.com.*

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#### QuikSwitch 32 1.2c (\$39.95)

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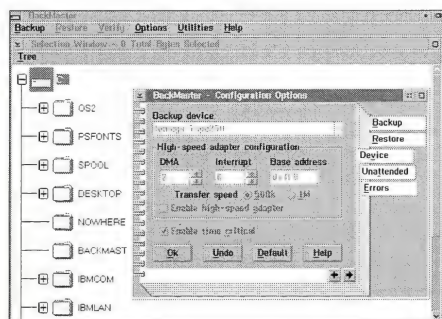
READER SERVICE NO. 151

#### AMOS 1.2 (\$31)

Allan Mertner  
Enghavevej 20A, 2tv  
DK-1674 Copenhagen V, Denmark  
FidoNet: 2:234/107 or 2:234/156  
OS2Net: 81:445/14  
CryptoNet: 70:450/0  
CompuServe: 100327,2035 - AMOS registration ID: 1808

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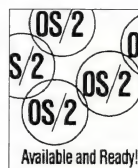
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# A secret guide to **The Enhanced Editor**

**M**ost new OS/2 users take a quick peek at the applets inside the Productivity folder, then close it down and forget about it forever. The sparse documentation, combined with the somewhat minimalist level of function in some of the applets, tends to leave users uninterested.

Don't be so hasty. There's gold in that folder, if you know where to look. I'm specifically referring to the Enhanced Editor application, a versatile general-purpose text editor with enormous hidden capabilities. The Enhanced Editor (EPM) has been designed to

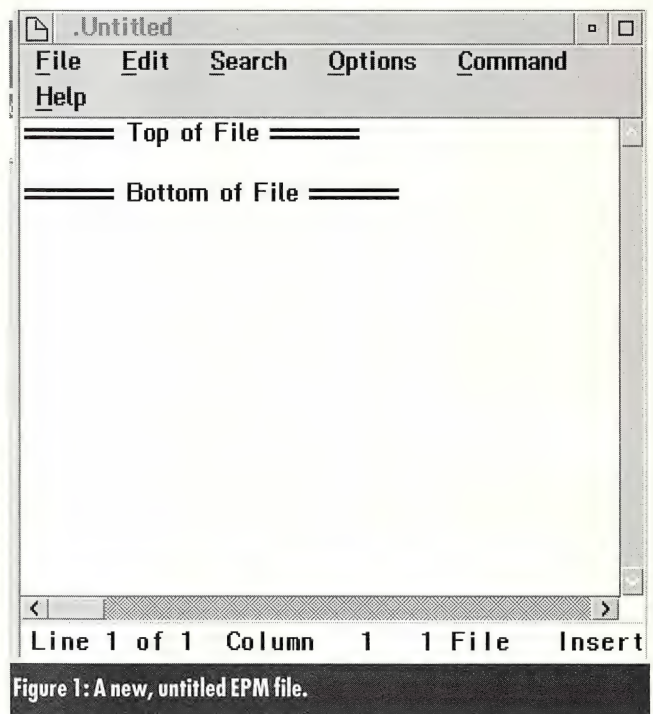


offer solid function to a wide variety of users and needs. Whether you're writing a simple text file, programming in C or REXX, or running EPM as the front end for a TCP/IP mail application, EPM's raw power is worth a close look. Here are some of the features in EPM that you might not know exist:

- A built-in command shell, accessible through a menu option or the SHELL command.
- A powerful search capability, including searching a selected region of text, a grep-like regular-expression search, reverse search, and bookmarks.
- Surprisingly powerful printing support, including near-WYSIWYG output and a preview capability.
- Language-sensitive editing, using the EXPAND command to turn syntax expansion on and off. EPM is "aware" of *.c*, *.pas*, and *.cmd*, as well as its own internal E language's *.e*.

### Guided tour

Let's begin our tour of EPM by double-clicking on the Enhanced Editor object in the Productivity folder. We are now looking at a new, untitled EPM file (Figure 1). This file is an ideal starting point for examining EPM's basic editing techniques. The most obvious thing you will notice is that we are dealing with a menu-driven, mouse-driven application. But if you're like me, and find you often prefer issuing commands and pressing function keys to



**Table 1: Edit menu items.**

| Item         | Description                                               | Keyboard Shortcut |
|--------------|-----------------------------------------------------------|-------------------|
| Undo line    | Undo changes in current line                              | <Alt+Backspace>   |
| Undo         | Undo changes                                              | <Ctrl+U>          |
| Copy         | Copy marked area to clipboard                             | <Ctrl+Ins>        |
| Cut          | Cut and move to clipboard                                 | <Shift+Del>       |
| Paste        | Insert text from clipboard                                | <Shift+Ins>       |
| Paste lines  | Insert and add lines                                      | —                 |
| Paste block  | Insert text as a block                                    | —                 |
| Style        | Change font, colors, and attributes                       | <Ctrl+Y>          |
| Copy mark    | Copy marked text to cursor                                | <Alt+C>           |
| Move mark    | Move marked text to cursor                                | <Alt+M>           |
| Overlay mark | Overwrite at cursor with text                             | <Alt+O>           |
| Adjust mark  | Overwrite at cursor and leave blanks at original position | <Alt+A>           |
| Unmark       | Unmark all marked text                                    | <Alt+U>           |
| Delete mark  | Remove marked text                                        | <Alt+D>           |
| Print mark   | Send marked text to printer                               | —                 |

**Table 2: Search menu items.**

| Item        | Description                                        | Keyboard Shortcut |
|-------------|----------------------------------------------------|-------------------|
| Search      | Input your search parameters                       | <Ctrl+S>          |
| Find Next   | Find next hit on search string                     | <Ctrl+F>          |
| Change Next | Repeat the last Change command                     | <Ctrl+C>          |
| Bookmarks   | Create a bookmark, or find/list existing bookmarks | —                 |

pointing and clicking, you will be glad to know that most mouse actions and menu options have either a function key or command equivalent.

Right away, we ought to give our text file a name. Select the FILE menu option with the mouse, then select the RENAME pull-down item (or simply press <F7>). Give the file some descriptive name and press <Enter>. Now we're ready to explore. To enter some text, just start typing. Once you have a few lines of text entered, we can begin to look at the more unusual options EPM provides to act upon this text.

First let's look at the EDIT menu item. As you can see, many of the pull-down items now available are "block-oriented," meaning that they are designed to work on marked blocks of text. You can mark a block of text by placing the pointer at the upper left corner of the block to be moved, then, while holding down the left mouse button, drag the pointer to the lower right corner of the block to be marked. Or, you can use the keystroke equivalent: place the cursor



at the upper left corner, press <Ctrl+B>, move the cursor to the lower right corner, and press <Ctrl+B> a second time. Table 1 lists the EDIT options.

As you can see, you have at your disposal a fairly thorough set of text-manipulation options, accessible through a familiar block-oriented paradigm. The options available under the SEARCH menu item, shown in Table 2, are also what you would expect from a solid, competent text editor. You will note that the Search dialog box, shown in Figure 2, has several features: selection of case-sensitivity, find-then-change, grep regular-expression search, and even a reverse-search (from the bottom of the file to the top).

#### Advanced Features

As you become more comfortable with EPM, you'll start to find your-

self bumping up against limitations and defaults that have you thinking about ways to tweak the program to get it to act the way you want it to. You have plenty of options—one of EPM's biggest benefits is its extensibility.

Let's explore EPM's printing options (Figure 3). First, EPM offers you two output options: Draft Mode and WYSIWYG Mode. Draft Mode is ideal for printing

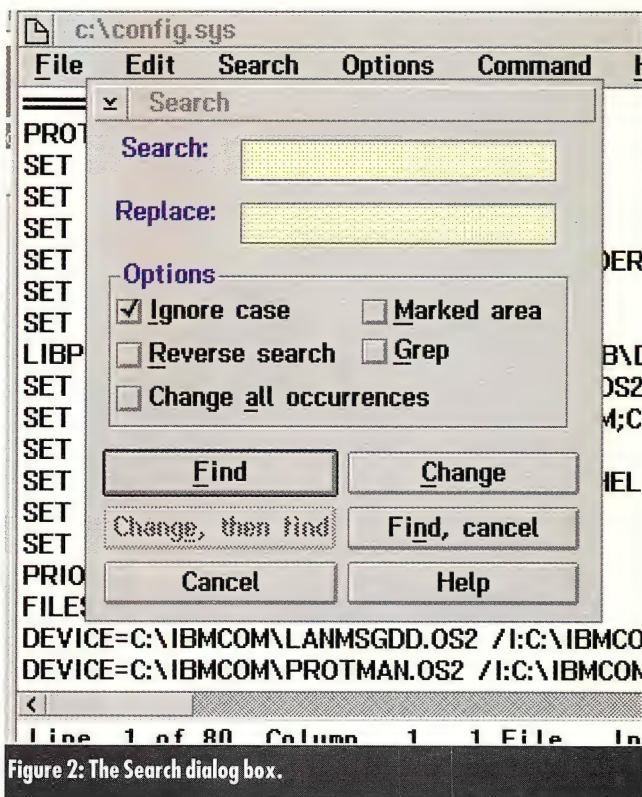


Figure 2: The Search dialog box.

We'd like to dispel a couple of myths about client/server testing.

#### Myth #1: Client/Server testing is easy.

New development tools make client/server applications easier than ever to build. The problem is, they're harder to test, and you just can't stand up to them with manual testing methods. **You need ATF, the only testing product designed for client/server.**

#### Myth #2: Client/Server testing is impossible.

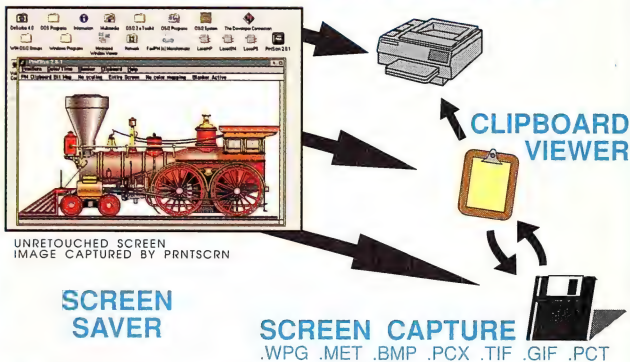
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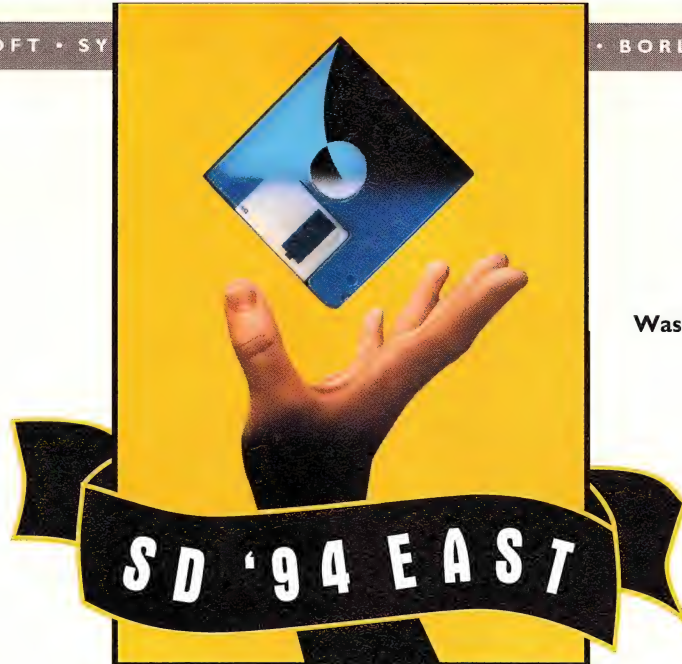
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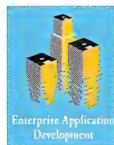
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out a quick-and-dirty copy for review before printing your final

copy. WYSIWYG mode (What You See Is What You Get) is actually only

funky fonts and sizes.

Let's also take a closer look at the Style dialog box (Figure 4) accessible under the EDIT menu. This dialog box enables you to create a text style consisting of a font, a font size, attributes such as bold or italics, and even a foreground and background color. You can then select Apply to apply the style to a marked block of text, or use the powerful Register pushbutton to register the style with EPM and save it, making it available for reuse any time you want it.

You probably noticed earlier that we ignored the OPTIONS menu item. This item offers enough power-user features to justify a separate, detailed explanation. Specifically, I want to explore the options available under Options/Preferences. Here we see the following: Settings, Advanced Marking, Stream Editing, Ring Enabled, and Stack Commands.

near-WYSIWYG quality; it's not on the par of a desktop publishing or high-end word processor application, but it's not bad. You also have a Preview button that displays an approximate on-screen image of what your printed output will look like. I recommend that you always use Preview to be sure the output will match your expectations, especially if you play around with

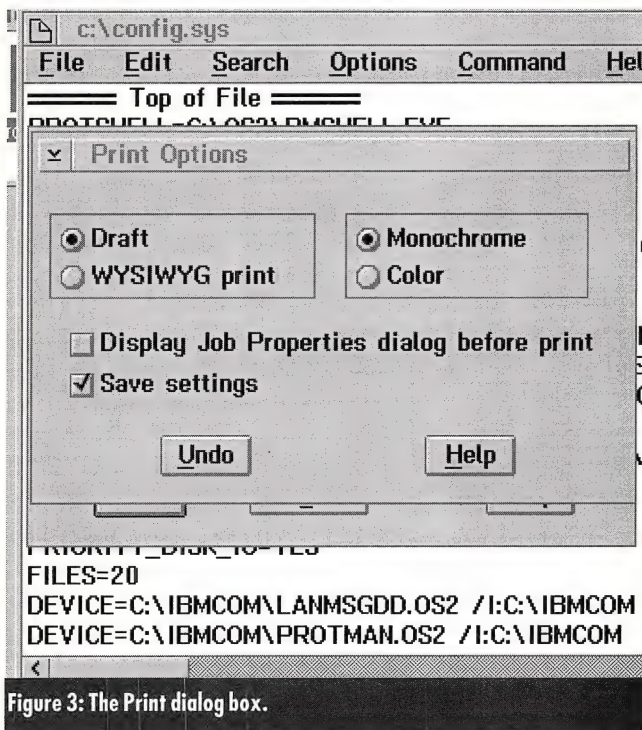
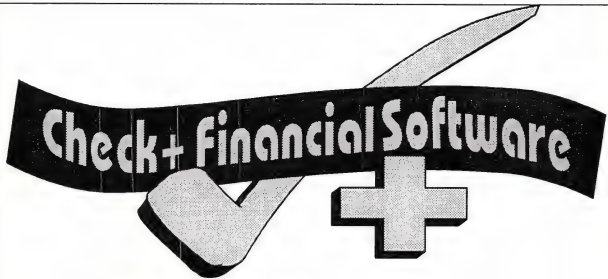


Figure 3: The Print dialog box.



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If you select Settings, you will be presented with the Settings notebook (Figure 5). Each of the notebook tabs enables you to change one of EPM's default behaviors:

- **Tabs** allows you to enter a number for the Tab interval. If, for example, you enter 12, the cursor will move 12 characters every time you press the <Tab> key.
- **Margins** allows you to set the left, right, and paragraph margins.
- **Colors** allows you to tweak the colors for the different components of the EPM interface. I normally prefer the default black-on-white colors, although when I'm feeling in a Darth Vader kind of mood, I reverse them for a sinister white-on-black effect.
- **Paths** lets you designate temporary and Autosave subdirectories.
- **Autosave** allows you to decide how many modifications (as determined the number of times the <Enter> key is pressed) can be made before EPM's Autosave feature kicks in and writes the

changes to a temporary Autosave file on disk. This feature can be handy if you live in an area where the weather causes power outages now and then.

- **Fonts** lets you set the default font and its associated attributes.
- **Keys**, while not as powerful as the macro concept we'll discuss later, allows you to override some of EPM's keystroke defaults.

To continue with the other Options/Preferences items:

- **Advanced Marking:** by default, EPM uses block-marking techniques. By enabling Advanced Marking, you are able to mark a block in four different ways: block marking, line marking, word marking, and character marking.
- **Stream Editing:** by default, EPM is set to line-editing mode: the text file is treated as a series of lines, and a carriage-return indicates the start of a new line. In Stream

mode, EPM essentially treats the file as a continuous stream of characters,

- with carriage-return treated as just another character.
- **Ring Enabled:** sooner or later, you will want to edit multiple files at the same time. Instead of starting up another copy of EPM to edit another file, Ring Enabled allows you to load multiple files into a "ring" and cycle through the ring to edit the various files.
- **Stack Commands:** this option enables stack-related commands.

### Pushing the envelope

It seems to be a chronic affliction among OS/2 users in general, and EPM users specifically, to always want more. They want to use EPM to edit mainframe host files directly on the PC. They want to embed REXX macros. They want to add menu items and pull-downs. They want to add curly-brace checking for C code. The beauty of EPM is, if you're willing to do the work, you can customize it to do pretty much anything you can think of.

To understand how these capabilities are possible, you must realize that EPM sits on top of a very powerful programming language called E. For a long time, EPM was written in E, and anyone who masters the E language can soup up EPM in ways limited only by the

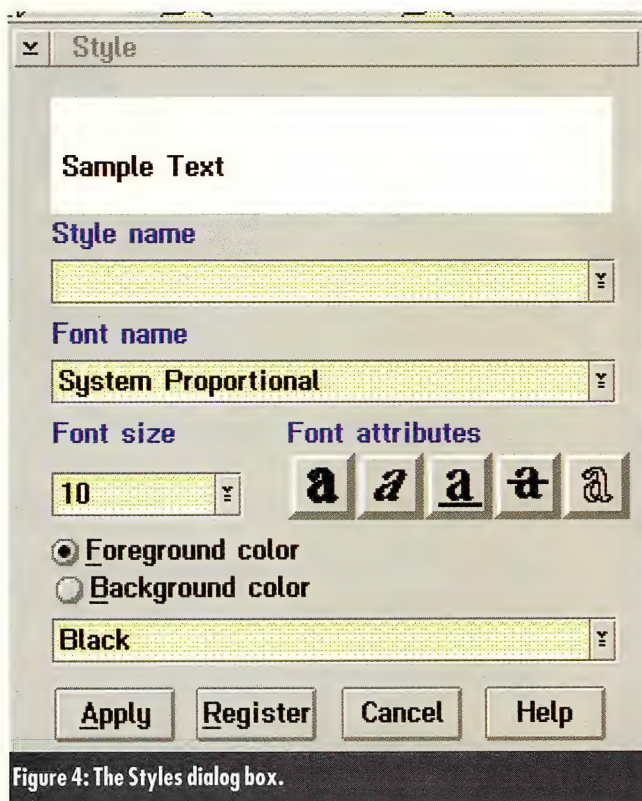


Figure 4: The Styles dialog box.

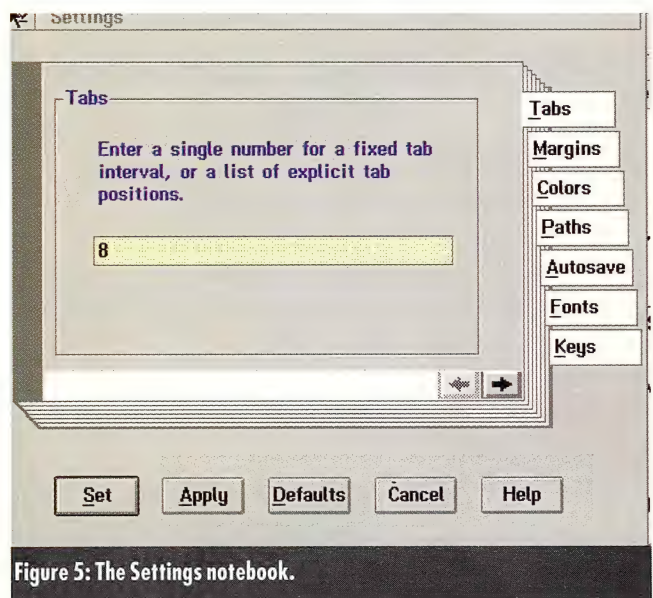


Figure 5: The Settings notebook.



imagination. Even if you lack the intestinal fortitude to tackle E, you can reap the benefits of those who have come before you and build an outstanding library of EPM add-ons, known as macros.

A discussion of the E programming language would require an article all to itself. *Epmbs.zip*, available on many bulletin boards, contains a technical reference document that can get you up to speed. Each macro is a text file with the extension *.e*, which is compiled with the "plain vanilla" EPM setup to create a new, customized version. The compiler tool is called ETPM, and is part of the *epmbbs.zip* package.

By now, you should be drooling at the thought of your very own personalized EPM, and you are probably wondering, "Where do I get this stuff and what is it called?" EPM-related files are available from several sources: IBM's TalkLink BBS, CompuServe's OS2SUP library 17, via anonymous FTP at *software.watson.ibm.com*, as well as various other local and national BBSs.

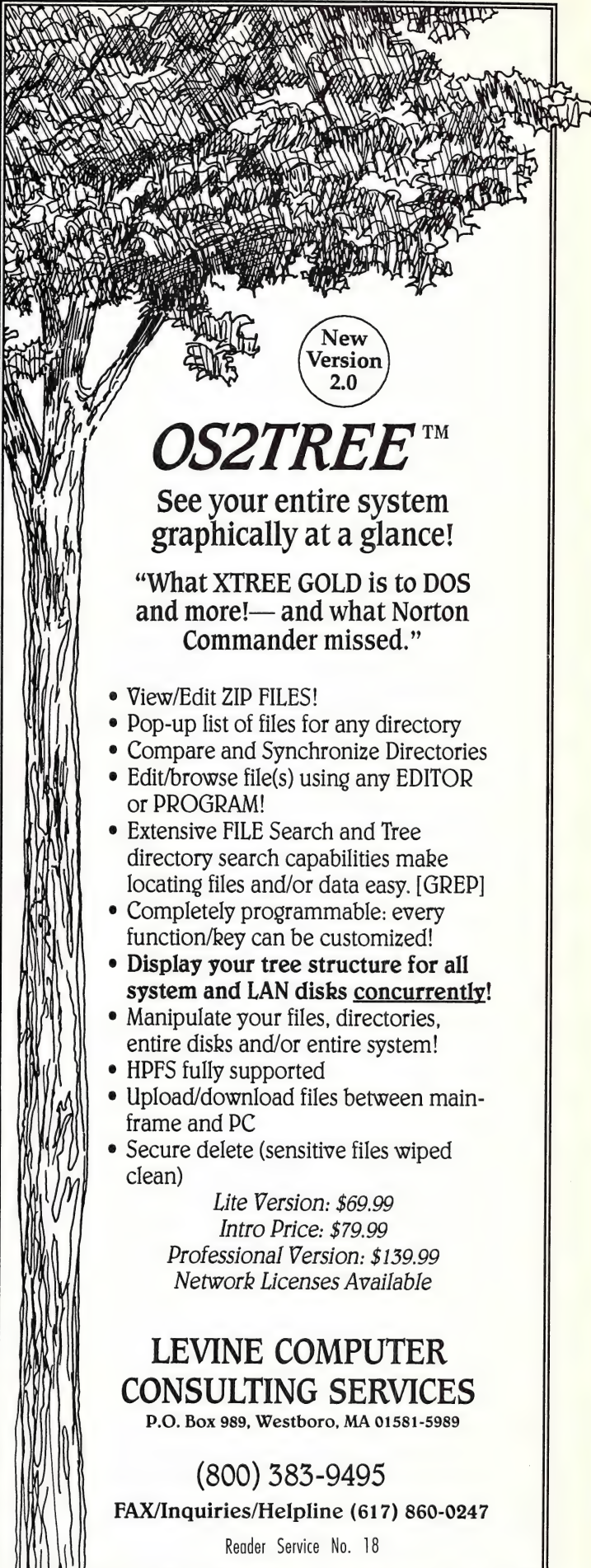
The files you want to download are *epmbbs.zip* and *ektbbs.zip*. *Epmbs.zip* contains not only the latest version of EPM, but a macro compiler and the source code for all the macros contained in the shipped version of EPM. (These macros are a great way to learn the E language by example.) You'll also find the *EPM User Guide* and *Macro Programmer Technical Reference*, PMMORE (a program for debugging EPM REXX macros), LAMPDQ, (a tool to execute commands on a VM host and have the output show up in an EPM window), EBOOKIE (which offers Book-master), GML, IPF support, and EPMASIST (which helps you add your own code-syntax macros and extensions to EPM). *Ektbbs.zip* contains the *E Toolkit Programmer Guide* as well as C source code for creating an EPM frame in a window.

It is important to emphasize that these add-ons are free, except of course for any on-line and telephone charges you incur in downloading them. Keep in mind, however, that these add-ons are provided "as-is," with the usual disclaimers. The programmers who actually designed EPM hang out on the E-EDITOR CFORUM on the TalkLink BBS, as well as on *comp.os2.programmer* on the Internet, so if you are in a jam, you can sound off in one of those places and someone should be able to help you.

Hopefully, I have given you enough of an idea of EPM's power to keep you interested and intrigued enough to plod ahead and become one of the growing number of EPM gurus who are using EPM for everything from writing code to creating detailed documents. As someone who has used EPM and its predecessors for almost a decade, I promise you there's a world of industrial-strength power in EPM if you are willing to go get it.

---

Steve Gallagher is part of IBM's RouteXpander/2 team in Research Triangle Park, N.C. He can be reached at *sgallagher@vnet.ibm.com*.



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# Driver Downloads Made Simple

The easy way to find and retrieve files from on-line services. **By Esther Schindler**

**Y**ou're ready to install a new piece of equipment—a CD-ROM drive, a faster video board, or a printer. But your copy of OS/2 (be it OS/2 2.1, OS/2 for Windows, or whatever) doesn't include the proper driver. When you call the manufacturer's Technical Support department for assistance, they tell you, "The OS/2 driver is available on our BBS," or "Download the driver from our forum on CompuServe."

What should you do? Well, first of all, don't panic. We'll guide you through the steps necessary to find and acquire OS/2 drivers on CompuServe and on a vendor's technical support electronic bulletin board. We're not going to explore the concept and benefits of bulletin-boards here; our pragmatic goal is simply to call a bulletin board, locate and retrieve drivers, then disconnect.

We'll assume that your OS/2 PC's modem is set up

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and configured correctly, but you may have little experience using it. For consistency, this article uses the PM Terminal program included with OS/2. You'll find it in the Productivity Folder inside your OS/2 System Folder.

We haven't chosen Terminal because of its intuitiveness—far from it—but because it's the one tool that all OS/2 2.x users should have available. Unfortunately, Terminal is one of the least impressive features of OS/2. It's arcane, inconsistent with OS/2's own interface standards, and distinctly unfriendly. So, if you already own a native OS/2 communications pro-

gram, or if you have any level of comfort with a DOS or Windows communications program, feel free to use it instead.

## Using the terminal program

Start Terminal by double-clicking on its icon in the Productivity folder. Terminal (also called SofTerm) will display a menu of predefined services. (See Figure 1.) It looks like they're already set up for you, but they really

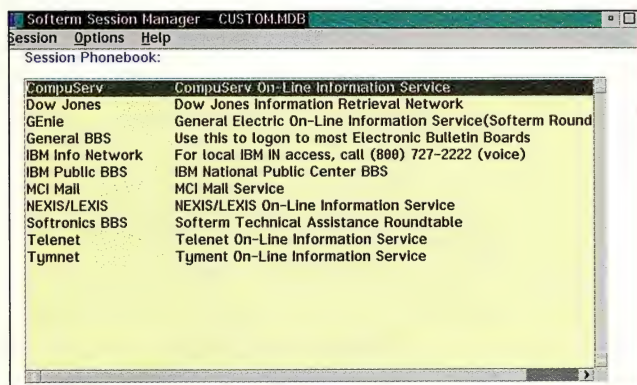


Figure 1: The Terminal main screen.

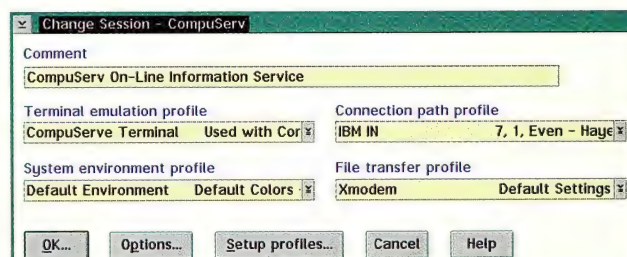
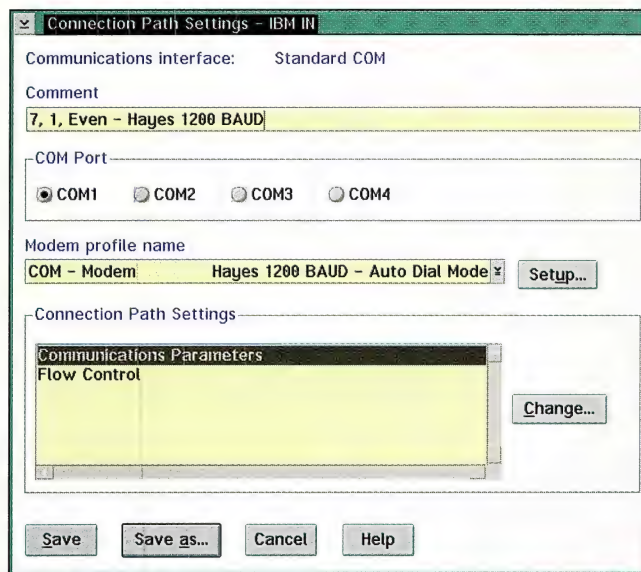
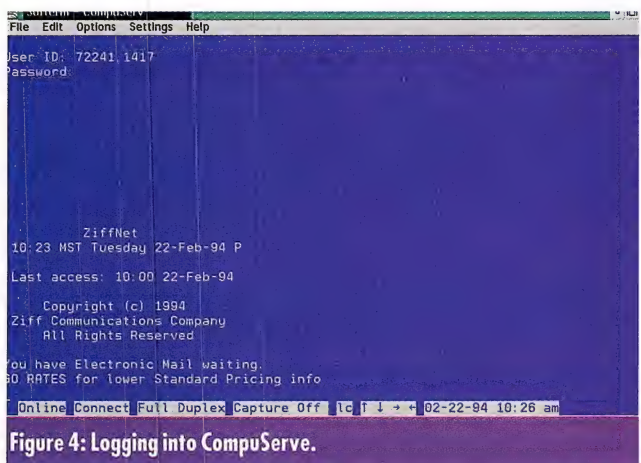


Figure 2: Changing the Terminal parameters for CompuServe.





**Figure 3: CompuServe requires that the settings be 7 Data Bits, Even Parity, 1 Stop bit. Fortunately, you don't have to understand what this means to get it to work.**

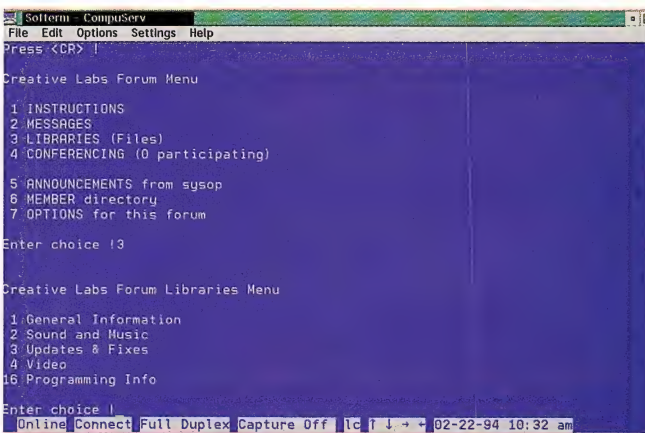


**Figure 4: Logging into CompuServe.**

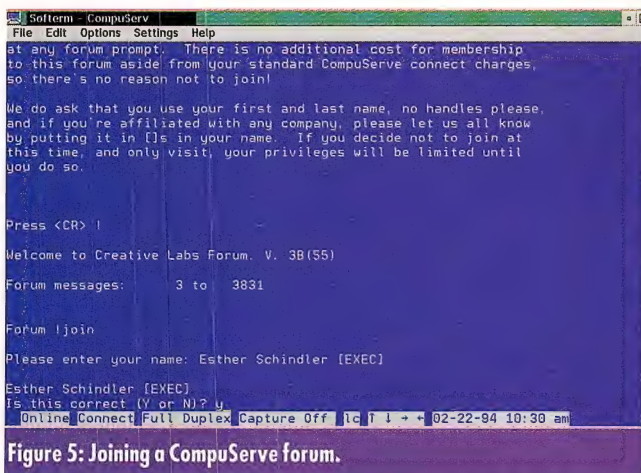
aren't. You still need to tweak the settings a bit. (By the way, despite the instructions given here, expect to spend some time looking at the Terminal help screens.)

If the driver you need is on CompuServe and you aren't yet a member, call (800) 848-8990 (voice). You might already have a sign-up kit for CompuServe, however, as kits are included in the box with most hardware and software—including OS/2.

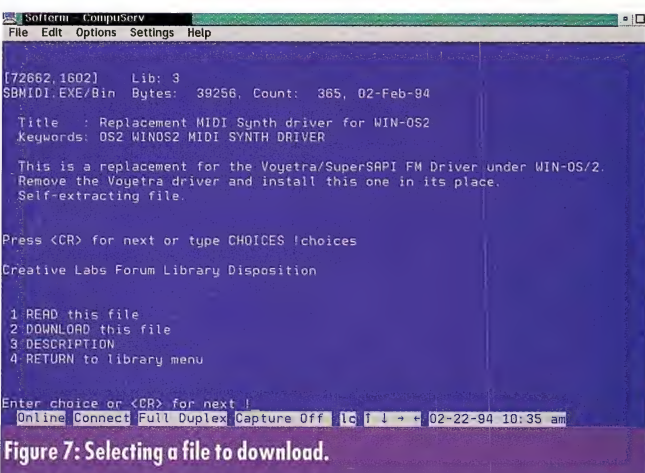
To set up Terminal for CompuServe, highlight CompuServe and choose Edit from the Session menu. Change the settings under Connection Path Profile to 7/Even/1, as shown in Figure 2. Unfortunately, Terminal's default modem speed set for that connection is 1,200 bits per second (the number of "bps" transferred is the measurement used for modem speed, and is slightly more accurate than the more commonly used "baud"). Your modem, even if it's fairly old, probably runs at a speed of at least 2,400 bps or, more likely, 9,600 or 14,400 bps. Change the Communications Parameters for the selected IBM IN and adjust the



**Figure 6: The Library menu in the Creative Labs (SOUNDBLASTER) forum.**



**Figure 5: Joining a CompuServe forum.**



**Figure 7: Selecting a file to download.**



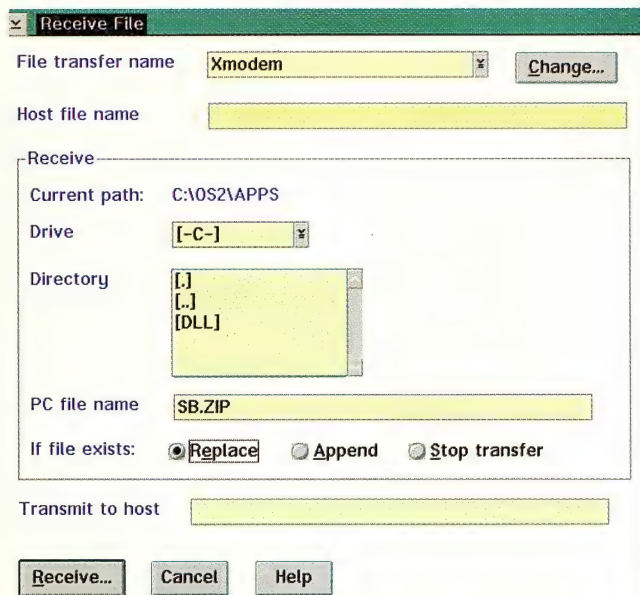


Figure 8: You have to tell Terminal what the file should be named on your local hard disk.

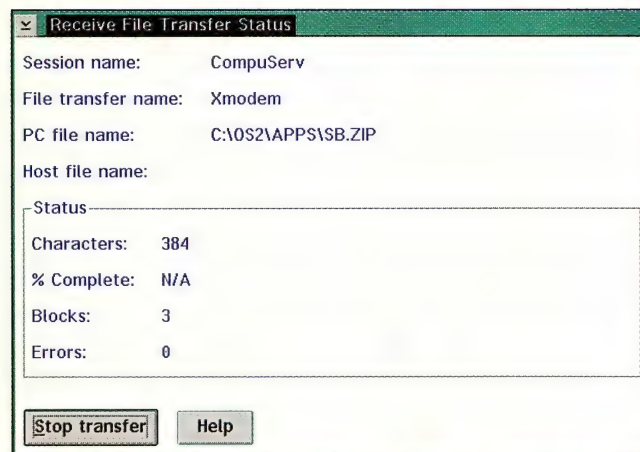


Figure 9: Terminal will show the status of the download during the file transfer.

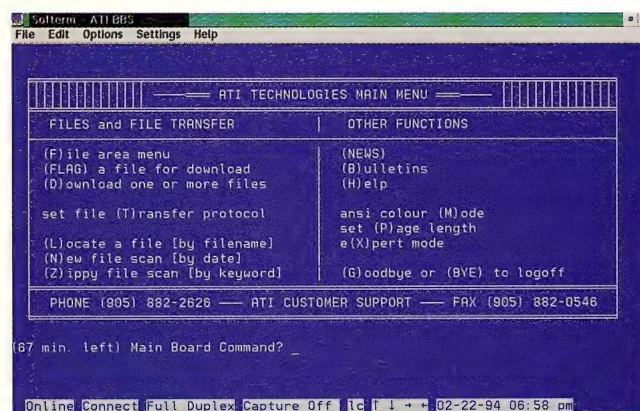


Figure 10: BBS menus all look very different, but nearly every one will have a File area.

modem speed to match your equipment, as shown in Figure 3. You will probably wish to save the parameters in a new file. (I called mine CompuServe at 14400.) After choosing OK... you type in the actual telephone number; you can find the local CompuServe phone number in your start-up kit.

Setting up to dial a new electronic bulletin-board service (BBS) is very similar. Choose New from the Session menu. Identify the service (such as "Vendor A's BBS"). The rest of the process is the same, except that for BBSs, choose 8/None/1 for the connection path profile. Make sure that you set your modem speed correctly.

Leave the default file-transfer protocol at XModem. A file-transfer protocol denotes the encoding that both communications programs use (that is, both your OS/2

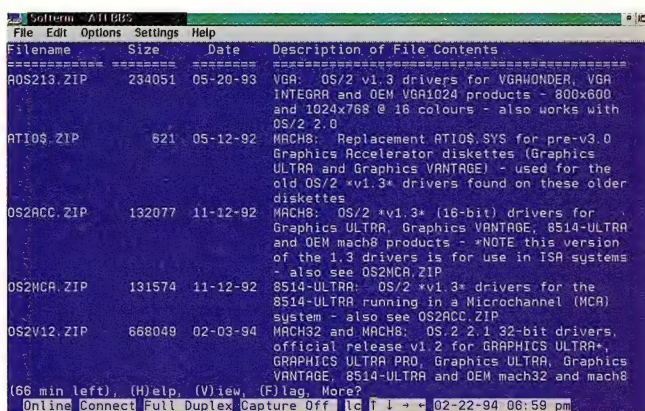


Figure 11: Selecting a file to download from a BBS.

software and the software controlling the bulletin-board) to transfer program and data files without error from one computer to another. XModem isn't the fastest way to transfer files, by far, but it's reliable and certain to be found on CompuServe and nearly any other service you dial into. (Nearly any book on telecommunications will discuss more technical information about file-transfer protocols.)

### Finding a driver on CompuServe

To dial into CompuServe, double-click on the CompuServe entry or select Start from the Session menu. Terminal will dial the telephone and connect with CompuServe. Enter CIS as the service, then, when prompted, your ID and password. You'll see a log-in screen similar to the one in Figure 4, followed by a menu of choices and services.

Let's find an OS/2 driver for the Soundblaster card in the Creative Labs Forum. Assume that Creative Labs' technical-support representative gave you the exact name of their forum: Blaster. (Many OS/2 drivers can be found on the OS2SUPP and OS2AVEN forums, by



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the way.) The next step is to access the forum by typing "Go blaster" and CompuServe will take you right there. You'll see an introductory announcement, describing the forum's purpose.

(If you don't know the forum name, type "Go forums" and wind your way through the menus until you find the right one. Or type "Find [subject]," such as "Find ATI" or "Find video;" CompuServe will give you a list of the most likely suspects to investigate. You can also always guess—most of the forums are named with some small semblance of sanity. For example, "Go ATI" will go to the forum that supports ATI video cards. In most cases, it's probably quickest to find the name of the CompuServe forum in your hardware's owner's manual, or ask the vendor's tech-support department for the forum name.)

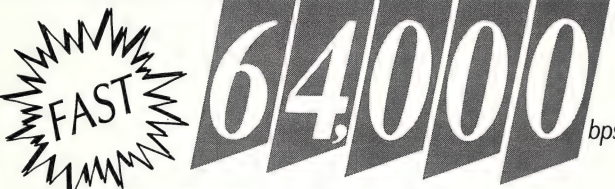
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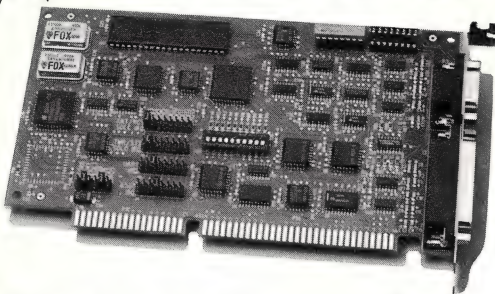
services, you need to join the forum. Type Join. CompuServe will prompt you to type your name, as shown in Figure 5. You'll see a menu of options, including Messages, Libraries, and Conferencing. At this time, you want to transfer a file from CompuServe to your computer; program and data files are stored in libraries, of which there are several in each CompuServe forum. So, choose Libraries, and select the one that seems most relevant (see Figure 6). In some cases, the tech-support representative will have told you in which library the driver resides.

If the tech-support rep was efficient, you were told the exact file name to look for. In that case, you can select Download and transfer the file from here. (Downloading is the process of copying a file from the remote site—the BBS or CompuServe—to your own com-

puter.) However, let's assume that you don't know the exact name. Choose Browse and, when prompted for a key word, supply one that makes sense: "OS/2" or "Driver" is a good guess, as is the model name of the product you're using (8514a or Horizon). Leave the age field blank by pressing <Enter>. (You might have to go through this process several times, before you find what you're looking for. It can be frustrating now, but you'll get better with practice.)

CompuServe will display a list of files that match your key words, one at a time. When you find the one you want, type Choices and then choose Download, as shown in Figure 7. Choose XModem as the file-transfer protocol, since that's what we defined in Terminal. CompuServe will tell you when to tell your communications program to start the download. When it





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does, choose Receive File... from Terminal's File menu. Terminal will display a dialog that looks like Figure 8; type in the name of the file you're downloading where it says PC File Name. Terminal will provide a status report during the download, as shown in Figure 9.

When the file transfer finishes—hey, you're done! You can type Off to disconnect from CompuServe. For good measure, choose Hang Up from the File menu. (I've found Terminal to be a little lazy about hanging up the phone.)

CompuServe can be an overwhelming place, especially with as wimpy a telecommunications tool as Terminal. You can do much more on CompuServe than downloading drivers. Many special-purpose telecommunications programs are designed to work with CompuServe, and all will make CompuServe easier and more satisfying to use. Currently, there's only one written for OS/2; it's called Golden CommPass, from Creative Systems Programming (see "Test Drives," by Brian Proffit, OS/2 Magazine, February 1994, pp. 21-29, for a review of Golden CommPass—ed).

### Finding a driver on a BBS

The general process of dialing into a BBS is similar to dialing CompuServe. You define the settings for the BBS in Terminal (remembering that BBSs need 8/None/1 instead of the CompuServe 7/Even/1) and set the file protocol to XModem. Instruct Terminal to dial the BBS by double-clicking on the BBS name you defined.

You will have to join the BBS, since you're new in that electronic neighborhood. Joining a BBS is more complex than joining a CompuServe forum. You will be asked to supply your name and address (and often other information) so that the company has a

record of you and your call. (After the first visit, it will be much easier to visit this particular BBS. You won't have to supply the sign-up information again, unless you don't come back for a very long time.) But, on the other hand, BBSs are usually free to use.

CompuServe may not have the most aesthetic interface in the

known universe, but at least it's consistent. Most BBSs, on the other hand, have customized their menus so that each new BBS seems like a whole new world, as shown in Figure 10.

To find a file on a BBS, look for the area called Files or Library. You can usually choose an OS/2 section from the files available, as shown in

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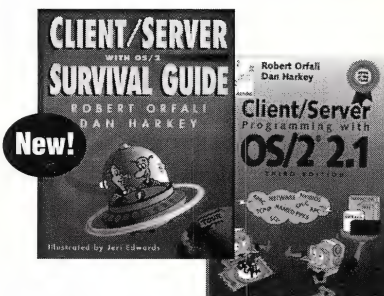
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Figure 11, and list the files. Choose the file(s) you want to download, then select Download from the BBS's menu. The rest of the downloading process is nearly identical to the download instructions for CompuServe, although you'll need to read the menus closely. To log off the BBS, you usually type G for Goodbye.

### Now what?

You have successfully downloaded the file you need to support that cool hardware. You're all set, right? Well, not exactly.

Most files are stored on BBSs in compressed or .zip form (for example, *stbdrv.zip*). Files are compressed to save space, and to group together related files in one manageable package. You need to use a utility program to decompress the zipped file into the several separate files; if you don't have one, you should be able to find one on the bulletin-board or on CompuServe. (see "Test Drives," by Brian Proffit, OS/2 Magazine, March 1994, pp. 15-27, for a review of compression utilities—ed) One of the files in the compressed file will be a text file with a name like *read.me* or *readme.doc*; it will contain the explicit instructions to incorporate the driver in your OS/2 system. The compressed file will also contain one or more driver files, often for different models of the peripheral in question; be sure you read the instructions carefully, to make sure you use the correct driver.

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# Making it up in Volume

Rolling out OS/2 using the CID Methodology by Rob Coventry

**Y**ou've convinced management to go ahead with rolling out OS/2 2.1 within your workgroup, department, or maybe even your company. Great! The next thing you know, you've "volunteered" for an installation schedule no human could possibly meet. You need to install OS/2 2.1 (25 diskettes), Communications Manager/2 1.1 (eight diskettes), LAN Requester 3.0 (three diskettes), LAN Adapter Protocol Support (one diskette), maybe the NetWare Requester, and an assortment of business applications. If you only had to install this stuff on a couple of computers, it wouldn't be so bad. However, you look at your dozen or more potential installations and that stack of diskettes and ask yourself, "How am I going to do this?"

## What are the alternatives?

OS/2 can be installed from CD-ROM or floppy diskette. Let's call this the *standard* method. If you have a network, you have a couple of other alternatives: replication/cloning, redirection, and configuration, installation, and distribution (CID).

The standard installation method involves installing software from diskettes. Many diskettes must be installed, dozens of questions must be answered, and the answers aren't necessarily simple. If you only have to install the software on a few machines or you don't have a network, standard installation may be your best method. If you have CD-ROM drives on your PCs, the CD-ROM version of OS/2 installs in about half the time of the multiple-diskette package.

You could also clone or replicate an OS/2 machine. Install OS/2 on a model machine. Then, use a tool to clone your model onto a target machine. If all the PC hardware is identical, this process may suit you well. But if you have many different hardware types or

installation scenarios, you may want to look at another alternative.

Redirected installation exploits the use of media other than diskettes to install software. CD-ROM is one example of redirected installation. The use of a network drive expands the redirected installation to multiple users connected to a network. This process involves copying the product diskettes onto a computer called a code server. The code server is attached to the network. From a workstation, you connect to the code server with a modified version of the OS/2 boot diskettes. Once you have connected to the code server, the installation proceeds like a standard floppy installation.

For those of us who have a large number of machines to install software on, even the improved performance that redirected installation provides takes more time than we'd like. With redirected installation, the questions have to be answered every time. Since there are so many questions to answer, you are likely to make mistakes. What you'd like to have is an automated method for installation. Enter configuration, installation, and distribution (CID).

Similar to redirected installation, CID involves copying installation diskettes to a code server and connecting to the network. The primary difference between redirected installation and CID is the ability to store the answers to all those pesky questions in a text file called a response file. The CID process then reads the answers stored in the response file at run time. The primary advantages to the CID process are consistency and performance. Since you can store the answers to all the installation questions in a text file, you can build standard response files and ensure that all the software is installed on your machines in the same way. The installation process is automated, so you can install software on more than one machine at



a time without having a person at each workstation.

Be aware that the CID process is not perfect. Each CID-enabled product provides you with a way to create response files, however, the method can vary. Still, if you have to install software on a large number of machines, CID may be the best option for you.

How many machines are considered a "large number?" I usually recommend CID to anyone who maintains 75 or more machines. Understand that there are exceptions to the rule. For example, if you maintain a set of machines that must be installed identically and stay in production 24 hours a day, you have a small time window for maintenance. CID is an ideal method for handling short maintenance schedules and consistent installs.

### What is CID?

CID is a process, not a product, that provides you with a way to install OS/2, OS/2 applications, and even some DOS applications. CID allows you to install across local-area networks (LANs) and wide-area networks (WANs) using standard network protocols.

In a CID environment, software installation diskettes are copied onto the hard diskette of a code server along with a CID management product that enables the code server to use the network to install software. Response files are created and stored on the code server. Finally, a modified version of OS/2 boot diskettes are used to connect the target machine to the code server for the installation.

The primary objectives of the CID process are to address the problems facing an administrator installing OS/2 software on a number of computers: eliminate diskette handling and user involvement, and optimize administrative involvement. Once the CID process is set up and tested, running the

CID installation is quite simple. CID's goal is accomplished through the use of a few key elements: response files, product images, and procedures that control the installations. The primary platform for CID is a LAN that supports NetBIOS, and that's what this article addresses.

### Hardware environment

Before we cover the products, let's define the hardware requirements. A typical code server should have a large hard drive to support all the product images, response files, and log files. You will also need a high-performance network adapter to provide the best possible delivery to your target machines. Although the process is primarily I/O intensive, you will want a 486 or better processor. I usually recommend a 400MB hard drive on a 486 with at least 16MB RAM and a BusMaster Token Ring card or Ethernet card.

Does this machine need to be a dedicated server? That depends on how often you plan to perform installation (include development and test time in this calculation). This question is tough and really depends on your environment. If you are supporting a network of 100 or more machines, you will probably want to have a dedicated code server because it will be busy running installations, updates, migrations, and configurations.

### What products are available?

It's important to understand the difference between CID products and CID-enabled products. A CID product is an application that provides the platform to install OS/2 software via CID. CID-enabled products are applications that can be installed using the CID process.

In the LAN environment, IBM provides two products for CID installation: Network Transport Services/2 (NTS/2) and Netview Distribution Manager/2 (NvDM/2). IBM also provides an "add-on" tool

called LAN Automated Distribution/2 (LAD/2) that can be used to front-end either NTS/2 or NvDM/2.

### To push or to pull

When deciding which product to select for your environment, you have to decide how you want to control the installation process. If you initiate the installation from a central location, you are *pushing* the installation to the target machines. When you initiate the installation from the target workstation, you are *pulling* the product. The essence of push and pull gets down to whether you attend the installation. In the pull environment, someone must attend each installation; in the push environment, you can perform unattended installations. NTS/2 is a pull product. NvDM/2 is a push product. LAD/2 can be used with NTS/2 or NvDM/2.

NTS/2 and NvDM/2 are both sold separately. NTS/2 is also included with LAN Server 3.0. It is easiest to think of these CID products as "thin" versions of LAN Server and LAN Requester. LAN Server is not required for NTS/2 or NvDM/2 to install your software using CID. Each product has a NETBIOS file server application that runs on a code server and a NETBIOS client that talks to the server.

Using NTS/2 involves writing REXX scripts for each installation procedure you must perform. A number of sample scripts are provided with the application, but changing them requires a good background in REXX. Since NTS/2 is a pull product, you must supervise each product installation or upgrade. These disadvantages conflict with two primary objectives of CID—reducing end-user involvement and administrative tasks. NTS/2, however, is somewhat inexpensive. You have to weigh the product costs against administrative costs.

LAD/2 was originally written to



address the problems of developing the REXX scripts required for the NTS/2 environment. LAD/2 provides a REXX code generator designed specifically for the NTS/2 environment. LAD/2 adds the ability to generate response files in a manner you are more familiar with—emulating the product installation dialogs. LAD/2 also provides the ability to support non-CID-enabled product installations as well as DOS and Windows applications.

NvDM/2 replaces the NTS/2 REXX scripts that control the

installation procedures with simple instruction profiles. The NvDM/2 profile contains the command line that you would type if you were to run the CID installation manually. NvDM/2 can control the installation of up to 100 machines simultaneously from one NvDM/2 computer and can support the definition of up to 1,000 users. NvDM/2 is the only product that extends CID beyond the LAN environment to a WAN environment and can be used to schedule installations. At the end of each installation, NvDM/2 stores the installation information in a DB2/2 database and prevents you from accidentally installing the same software twice. This database can be used for a number of post installation system-management processes. NvDM/2 also provides a method to handle locked system files for applying fixes and incremental updates.

NvDM/2's biggest disadvantage is its poor front end. In 1994, LAD/2 was enabled to provide front-end support to NvDM/2. You can use LAD/2 to create response files and control your NvDM/2 environment.

### CID enabling software

Two key capabilities are required for a product to be CID enabled: redirected installation and response-file support. Six general requirements must be met to CID enable software:

- Storage of product diskettes on the code server
- Support and generation of response-files
- Support for any network drive (redirected)
- Return code support to the CID product
- Command-line parameter support
- Progress information

A CID-enabled product has a modified *install.exe*, which can be run across the network and will read

response files. The product vendor must also provide you with the ability to store the installation diskettes (product images) on the code server. Command-line parameters are used to tell the installation program things like where the product images are located and the name of the response file. Return codes are used to report the status of the installation to the CID product. CID products provide an automated method to reboot during an installation and return codes are most often used to communicate the need for a reboot.

### How to install OS/2 2.1 using CID

The first step in any CID installation is to create response files. To get a feel for the options that will be presented in the response file, start by manually installing OS/2 (or the appropriate software) a couple times using different answers to the installation questions. Each product has a different method for creating response files. OS/2 creates response files as a byproduct of a manual installation procedure. LAPS and CM/2 have programs that create response files from running configured code. DB2/2 and LAN Server provide dialog-driven response-file creation. Each procedure is lacking in one way or another, which is why LAD/2 is appealing to many people.

### Response files

To create a response file for OS/2, simply run your normal installation. The OS/2 installation program creates a response file called *user.rsp*, which is stored in *\os2\install* on your boot drive. *Sample.rsp* is also stored in *\os2\install*. Remember that a response file is a text file that contains all the answers to the installation questions for a given product. Each installation question represents a keyword in the response file. The answers to the questions are

### Listing 1: *User.rsp*.

```
AlternateAdapter=0
APM=1
BaseFileSystem=2
CDROM=6
SCSI=
CountryCode=001
CountryKeyboard=US
DefaultPrinter=132
DiagnosticAids=1
DisplayAdapter=0
Documentation=2,4
DOSSupport=1
WIN-OS/2Support=1
DPMI=1
ExitOnError=0
Fonts=1
FormatPartition=1
MigrateConfigFiles=0
MoreBitmaps=1
Mouse=1
MousePort=0
OptionalFileSystem=1
OptionalSystemUtilities=1
PCMCIA=1
PrimaryCodePage=1
PrinterPort=1
ProcessEnvironment=1
ProgressIndication=1
RebootRequired=0
REXX=1
SerialDeviceSupport=1
SourcePath=A:
TargetDrive=C:
ToolsAndGames=2,4
```

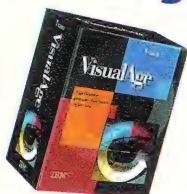


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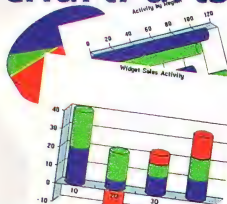


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represented by the values of the keywords. Together, these are called keyword pairs. *User.rsp* contains all the keyword pairs you selected in addition to some defaults. *Sample.rsp* contains nearly all the keyword pairs that can be used in an OS/2 installation. Notice that in *sample.rsp*, comments can be entered by starting a line with an asterisk. Asterisks are commonly used in all CID-enabled applications for comments. I recommend using comments to internally document your response files so you will understand your selections later. For detailed descriptions of an OS/2 response file refer to the IBM RedBook, *Automated Installation for CID Enabled OS/2 V2.x* (Document Number GG24-3783-01).

I ran a manual installation to create *user.rsp*. During that installation, I chose FAT as my primary file system. You will see that the keyword **BaseFileSystem** is set to two (**BaseFileSystem=2**). If you look at the *sample.rsp* created by your machine, you will see that the value two means you want to use FAT to format the installation partition. I also told the installation program to format my installation partition (**FormatPartition=1**). It's quite difficult to memorize what all the values mean, so you can see the value for comments inside your response files as used in *sample.rsp*.

Once you are satisfied with the values in your response file, you only have one step before it can be used in a CID environment. In *user.rsp*, you'll see the statement **ExitOnError=0**. The CID installation won't work unless you change it to **ExitOnError=1**. This statement tells the OS/2 installation program that you are running a CID installation as opposed to a redirected installation. Finally, **SourcePath** is set to A:. You should remark this keyword out. If you leave **SourcePath=A:**, the CID process will look for the product

images on your disk drive.

User exits can be used to perform a number of tasks during the installation. With OS/2, the **UserExit** keyword is performed after the product is installed but prior to a reboot. So, the system is completely installed and "unlocked." I use **UserExit** to apply fixes, perform cleanups, and so on. I use user exits to apply the shutdown fix for OS/2 2.1.

### Creating the OS/2 image

OS/2 provides a program called *seimage.exe* to create the product image on your code server. First, you have to "unpack" *seimage.exe* from diskette number 7. Diskette 7 contains two package files named *cid* and *required*. You need to unpack each of these files onto your code server. Assume you want to create your image in a directory named *d:\cid\img\os2v21* on your code server. Insert diskette 7 in your drive and type **UNPACK A:CID D:\CID\IMG\OS2V21**. Unpack *required* too. When you are done, you will find *seimage.exe* in *D:\CID\IMG\OS2V21*. Now, you are ready to create the OS/2 image. Insert your OS/2 installation diskette and type **SEIMAGE /a:A: /t:D:\CID\IMG\OS2V21**. *Seimage.exe* will prompt you to insert the remaining product diskettes until it has created the entire image.

### Running the CID install

Follow the instructions for installing the CID product of your choice: NTS/2 or NvDM/2. RedBooks and cookbooks are available for both products. I recommend ordering *Automated Installation for CID Enabled Extended Services, LAN Server V3.0 and Network Transport Services/2* (GG24-3781-01) if you plan to use NTS/2 or NvDM/2. For NvDM/2, you will want the cookbook written by Wen Moy titled *OS/2 System Software Distribution and Installation Using NetView DM/2*.

This book is a fantastic step-by-step guide to installing NvDM/2 and using NvDM/2 to install your OS/2 products. The OS/2 **INSTALL** command line remains the same for both NTS/2 and NvDM/2 environments. For NTS/2, you will embed the **INSTALL** command in a REXX script. NvDM/2 stores the command in a profile. To run an OS/2 installation in a CID environment, you need a command line like:

```
X:\IMG\OS2V21\SEINST.EXE
/S:X:\IMG\OS2V21 /B:C:
/R:X:\RSP\OS2V21\SAMPLE.RSP
/L1:Y:\userid.log /T:A:\
```

A loose standard exists for CID-enabled software, so the parameters will be the same in nearly all CID-enabled products. X: represents the drive letter your CID product uses for the source drive. Remember, the drive letter is from the client perspective, as in the LAN Server or NetWare environment, not the code server's hard drive letter. Both NTS/2 and NvDM/2 have methods to replace this value with a variable. Refer to the documentation for how it works:

- Y: represents the drive letter your CID product uses to write logs back to the code server.
- /S: tells *seinst.exe* the source drive and directory on your code server.
- /B: is the boot drive for OS/2 on your target machine.
- /R: is almost always the response-file parameter, which includes the entire path and filename of the response file. Again, both NTS/2 and NvDM/2 have methods for replacing this value with a variable. Refer to their documentation for details.
- /L1: tells *seinst.exe* where to log the results of the installation. The installation log is handy for troubleshooting and verifications.
- /T: is a weird one. This tells *seinst.exe* which drive you just



booted from. Remember this one for later. Since we will boot from a diskette, this value will be A:.

Performing the installation will be slightly different for each product. But for both, you will need to create a modified set of OS/2 boot diskettes. You will start by running another of the programs, which was unpacked earlier: *sediskette.exe*. You run this program with two parameters: /S: and /T: representing the source and target drive and directories respectively. Then, you need to load LAPS and the CID product of your choice. Once you have created your installation diskettes, you can boot from them at your target machine and run your installation.

The process of booting from diskette for OS/2 installation is only required in a "pristine" environment when using NvDM/2. When a machine has no OS/2 or LAN code, it is considered a pristine machine. If you have OS/2 and LAN software on your target machines, you can automate every task when using NvDM/2.

### The big payoff

CID software installation may sound like a lot of work. It's really not that bad. The benefits come to you once you have established your CID process. Every change that you want to make on the machines you support can be automated with CID. Every upgrade you want to install can be automated with CID. CSDS can be installed using CID. Who could ask for anything more?

*Rob Coventry has worked for IBM since 1990 and is currently a member of the Midwest Area Consulting and Services Division. He has been consulting various clients on the topic of OS/2 distribution for the last two years. Rob has just completed the development of a staging process using CID for a large insurance client. He can be reached on CompuServe at 73764,625.*

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# Tuning NetWare, Part III

## Implementing IBM-Novell Interoperability by Bob Panza

In May, we discussed how to optimize many of the *net.cfg* settings found in Novell's NetWare Client 2.01 for OS/2, also known as the NetWare Requester ("NetWare Fine Tuning" pp. 41-45). Last month, we explored fine-tuning the NetWare Client if you're using Novell's ODI drivers as a means of accessing the network adapter ("NetWare Tuning with ODI" pp. 41-45). This month, we'll conclude our optimization journey by discussing *lansup.sys*, which is Novell's driver for interfacing with IBM Extended Services. We'll also touch on IBM's *odi2ndi.sys* driver, which facilitates closer IBM-to-Novell interoperability.

### Listing 1: *Protocol.ini* changes for ODI2NDI configuration.

The LAPS program makes an ODI2NDI entry into the **IBMLXCFG** section of the *protocol.ini* file and adds an **ODI2NDI\_NIF** section which specifies frame types resembling those we saw in *net.cfg*. The workstation is set up for Token-Ring.

```
[IBMLXCFG]
IBMTOK_nif = IBMTOK.nif
LANDD_nif = LANDD.nif
ODI2NDI_nif = ODI2NDI.nif
```

```
[ODI2NDI_nif]
DRIVERNAME = ODI2NDIS$
BINDINGS = IBMTOK_nif
TOKEN-RING = "YES"
TOKEN-RING_SNAP = "YES"
ETHERNET_802.3 = "NO"
ETHERNET_802.2 = "NO"
ETHERNET_II = "NO"
ETHERNET_SNAP = "NO"
TRACE = 0x0
```

### NDIS drivers

Do you remember OS/2 Extended Edition 1.x? NetWare Client's *lansup.sys* replaces OS/2 1.x's *tokenee.sys* and its successor, *cmgrlan.sys*. The new *lansup.sys* is named after *lansup.com*, the Novell ODI driver that sits above the

### Listing 2: *Config.sys*

The LAPS program places most of its entries after the NetWare Requester section. *Odi2ndi.os2* becomes the driver to interface the NetWare Requester directly with NDIS, rather than through 802.2 (*landd.os2*) such as in the *lansup.sys* configuration. *Odi2ndi.sys* is inserted between *lsl.sys* and *route.sys* where *token.sys* and *lansup.sys* are located in the configuration examples.

REM lines inserted before the NetWare Requester section:

```
DEVICE=C:\IBMCOM\LANMSGDD.OS2 /I:C:\IBMCOM
DEVICE=C:\IBMCOM\PROTMAN.OS2 /I:C:\IBMCOM
```

REM NetWare Requester section (partial view):

```
SET NWLANGUAGE=ENGLISH
DEVICE=C:\NETWARE\LSL.SYS
RUN=C:\NETWARE\DDAEMON.EXE
device=c:\ibmcom\protocol\odi2ndi.os2
DEVICE=C:\NETWARE\ROUTE.SYS
DEVICE=C:\NETWARE\IPX.SYS
DEVICE=C:\NETWARE\SPX.SYS
```

REM after NetWare Requester section:

```
RUN=C:\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C:\IBMCOM\LANMSGEX.EXE
DEVICE=C:\IBMCOM\PROTOCOL\LANDD.OS2
DEVICE=C:\IBMCOM\PROTOCOL\LANDLLDD.OS2
DEVICE=C:\IBMCOM\MACS\IBMTOK.OS2
RUN=C:\IBMCOM\PROTOCOL\LANDLL.EXE
```



IEEE 802.2 interface of IBM LAN Support Program on DOS workstations. Likewise, the NetWare OS/2

Client with *lansup.sys* runs on top of the IBM Extended Services IEEE 802.2 interface.

In fact, *lansup.sys* replaces any Novell-specific hardware driver, such as *token.sys* or *ne2000.sys*. With

### Listing 3: Protocol.ini

With LANSUP, the standard IBM NDIS drivers are required. *Lansup.sys* and Novell ODI do not hook directly into NDIS. Instead, they reside above the IBM communications interfaces and drivers. Link support buffer size in the *net.cfg* needs to be 4,202 bytes, or six bytes smaller than **XMITBUFSIZE**.

```
[PROT_MAN]
DriverName = PROTMANS
```

```
[IBMLXCFG]
IBMTOK_nif = IBMTOK.NIF
LANDD_nif = LANDD.NIF
```

```
[LANDD_nif]
DRIVERNAME = LANDD$
BINDINGS = IBMTOK_nif
ETHERAND_TYPE = "I"
SYSTEM_KEY = 0X0
OPEN_OPTIONS = 0X2000
TRACE = 0X0
LINKS = 41
MAX_SAPS = 5
MAX_G_SAPS = 0
USERS = 4
```

```
[IBMTOK_nif]
DRIVERNAME = IBMTOK$
PRIMARY
MAXTRANSMITS = 12
RECVBUFS = 2
RECVBUFSIZE = 256
XMITBUFS = 1
XMITBUFSIZE = 4208
```

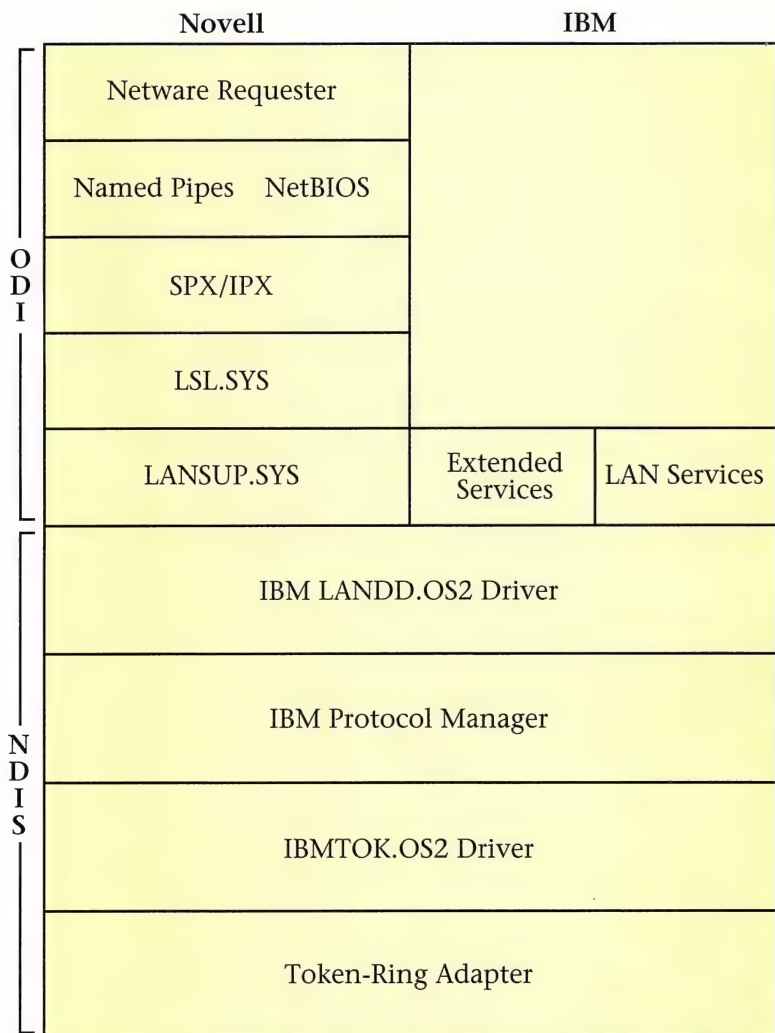


Figure 1: LANSUP enables Novell's ODI stack to sit on top of the IBM Extended Services NDIS-based architecture. Notice that the ODI stack is pushed way up. The resulting diagram defies almost all resemblance to the OSI model. The placing of the NetWare Requester on top of IBM communication interfaces was the original way of configuring Novell/IBM interoperability and dates back to the early days of the NetWare Requester on IBM's OS/2, Extended Edition.

### Listing 4: PATHs

PATH lines are similar to those shown for the ODINSUP configuration in last month's issue. The position of **\ibmcom** directories relative to **\netware** can be affected by the sequence of software installation. In addition, **\netware** precedes **l:\os2** and **p:\os2** because NetWare OS/2 utilities are stored locally.

```
LIBPATH=.; C:\OS2\DLL; C:\MUGLIB\DLL; C:\OS2\MDOS; C:\CMLIB\DLL; C:\; C:\OS2\APPS\DLL;
C:\NETWARE; C:\IBMCOM\DLL
SET PATH=C:\OS2; C:\MUGLIB; C:\OS2\SYSTEM; C:\OS2\MDOS\WINOS2; C:\CMLIB; C:\CMLIB\APPN;
C:\OS2\INSTALL; C:\; C:\OS2\MDOS; C:\OS2\APPS; C:\NETWARE; L:\OS; P:\OS2
SET DPATH=C:\OS2; C:\MUGLIB\DLL; C:\CMLIB; C:\CMLIB\APPN; C:\OS2\SYSTEM; C:\OS2\MDOS\WINOS2;
C:\OS2\INSTALL; C:\; C:\OS2\BITMAP; C:\OS2\MDOS; C:\OS2\APPS; C:\NETWARE; C:\IBMCOM; L:\OS2;
```



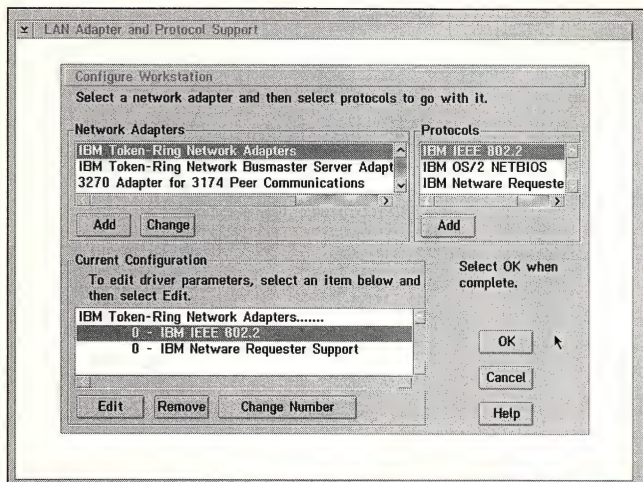


Figure 2: The IBM LAN Adapter and Protocol Support (LAPS) program configures the OS/2 node for different adapters, protocols, and protocol parameters. LAPS is part of the Network Transport Services/2 (NTS/2) package, which is like a LAN Support Program package for OS/2. NTS/2 includes the IBM *odi2ndi.os2* driver for interfacing the NetWare Requester directly with low-level IBM NDIS drivers—the reverse of Novell's *odinsup.sys* driver, discussed in June.

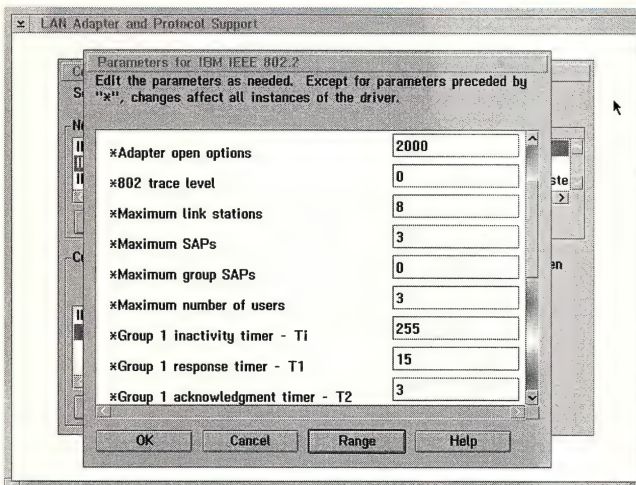


Figure 3: IBM IEEE 802.2 parameters specify Token-Ring adapter configuration and timer settings. The 802.2 interface is important for interoperability with network layer communication protocols. It serves as the interface used by 3270 terminal emulation running over Token-Ring. Novell's *lansup.sys* also sits on top of 802.2 in order to utilize IBM lower-layer drivers, which in turn access the network adapter. A Service Access Point (SAP) is like a port reaching down into the adapter that allows access by a single communications program.

*lansup.sys*, the full range of frame types do not need to be defined unless the NetWare Requester requires them. Extended Services, rather than NetWare, will control and configure the adapter. For SPX/IPX traffic, *net.cfg* LINK DRIVER examples applicable to Token-Ring and Ethernet are as follows:

```
LINK DRIVER LANSUP
```

## Listing 5: IBM Communication Lines

Protocol Manager (*protman.os2*) loads prior to the 802.2 interface LAND drivers. *Ibmok.os2* is the IBM MAC layer driver for NDIS. The underlying configuration remains fairly standard from the IBM perspective.

```
DEVICE=C:\IBMCOM\LANMSGDD.OS2 /I:C:\IBMCOM
DEVICE=C:\IBMCOM\PROTMAN.OS2 /I:C:\IBMCOM
DEVICE=C:\IBMCOM\PROTOCOL\LANDD.OS2
DEVICE=C:\IBMCOM\PROTOCOL\LANDLLDD.OS2
```

```
DEVICE=C:\CMLIB\ACSLDLAN.SYS
RUN=C:\OS2\EPW.EXE
device=c:\ibmcom\macs\ibmtok.os2
RUN=C:\IBMCOM\PROTOCOL\LANDLL.EXE
RUN=C:\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C:\IBMCOM\LANMSGEX.EXE
DEVICE=C:\CMLIB\APPN\CMKFMDE.SYS
```

```
FRAME TOKEN-RING
```

```
LINK DRIVER LANSUP
FRAME ETHERNET_802.2
FRAME ETHERNET_SNAP
```

Again, the first **FRAME** line will be utilized by the Get Nearest Server broadcast. Notice that *lansup.sys* does not support the Ethernet\_802.3 frame type (raw), which means trouble for SPX/IPX traffic on enterprise Ethernet. The workaround is to initialize both Ethernet\_802.2 and Ethernet\_802.3 frames on NetWare servers as required. The NetWare servers will then route SPX/IPX traffic between the two logical networks formed by the workaround. Each frame type needs its own unique network (NET) number.

You can tune *net.cfg* parameters accordingly per NetWare requirements. However, since ODI does not have control of the adapter, the *net.cfg* configuration must not exceed the resources specified within the Extended Services' *protocol.ini* file. The orchestration between *net.cfg* and *protocol.ini* parms is important. For example, the link buffers for IBM Token-Ring 16/4 adapters optimized as:

```
LINK SUPPORT
BUFFERS 14 4202
```

or 14 buffers at 4,202 bytes each, requires a transmit buffer in *protocol.ini* set to:

```
XMITBUFSIZE=4208
```

which is six bytes larger than 4,202. (The **XMITBUFSIZE** value must be a multiple of eight.) In other words, the *net.cfg* buffers cannot be larger or greater in number than whatever the *protocol.ini* specifies. The NDIS MAC



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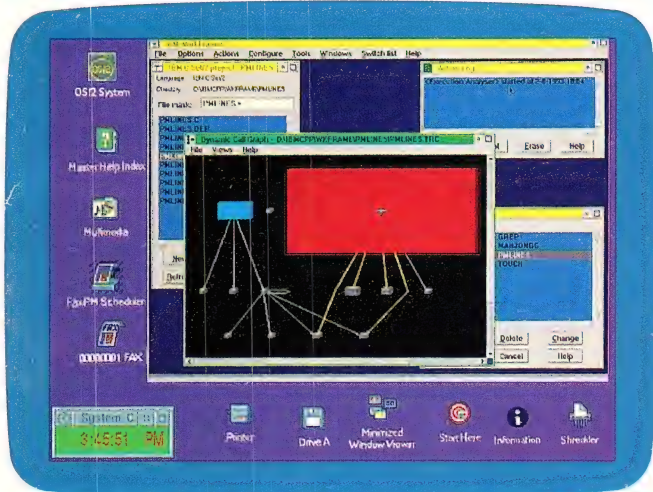
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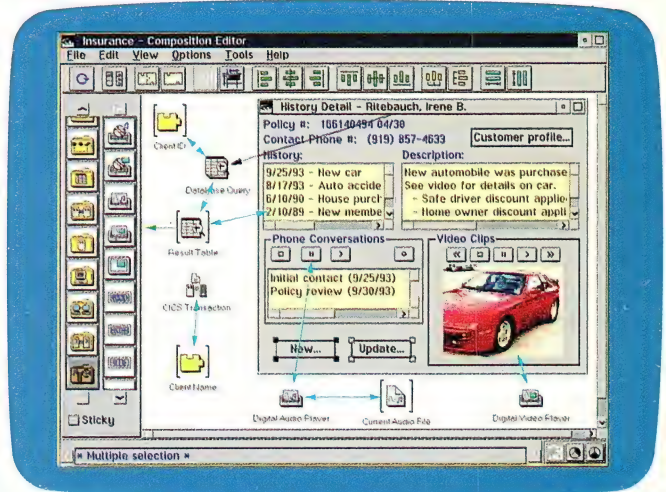


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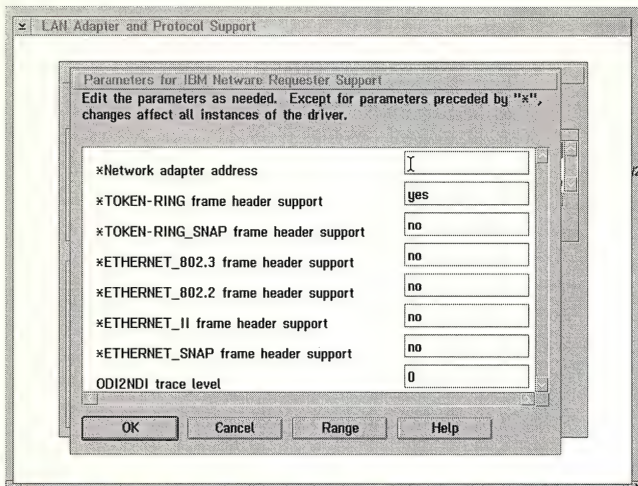
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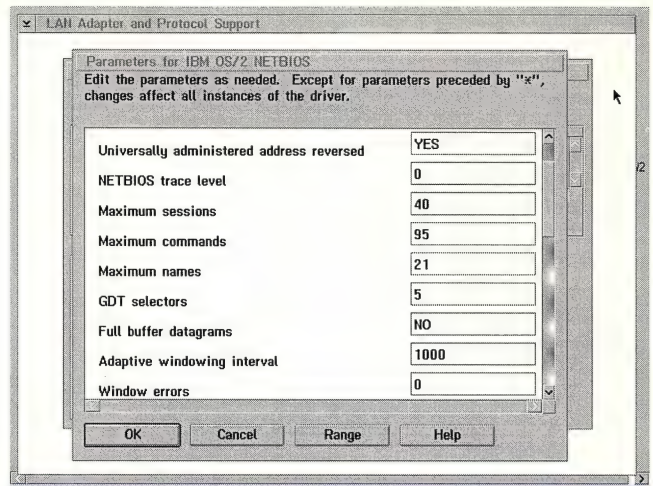
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**Figure 4:** The LAPs program can also be used to help configure the Novell NetWare Requester to run with the IBM *odi2ndi.sys* driver. Adapter frame types are specified to make *protocol.ini* file entries that will configure the adapter for the topology and network protocols to be initialized. Frame types follow the options for the NetWare Requester's *net.cfg* file, as we discussed in May.



**Figure 5:** IBM's OS/2 NetBIOS must be set up to support IBM LAN Requester or LAN Server. NetBIOS may be run concurrently with other protocols, such as SPX/IPX, TCP/IP, LLC, and Named Pipes. The OS/2 workstation can participate in native Novell, IBM, and UNIX LAN functionality at the same time. Token-Ring adapter architecture grants NetBIOS its own SAP apart from the 802.2 SAPs. In effect, all NetBIOS communications programs utilize the same SAP.

layer driver (IBMTOK), which was disabled in the *protocol.ini* for *odinsup.sys*, must remain active with *lansup.sys*. The node address needs to be defined in the *net.cfg* even if the burned-in address is used.

In the *config.sys* file, path lines are essentially the same as they were in the *odinsup.sys* configuration, discussed last month. In addition, Protocol Manager and NDIS driver lines are similarly positioned to precede the NetWare Requester section. In the NetWare Requester section, *lansup.sys* replaces *token.sys*, and *odinsup.sys* is not present. *Route.sys* will be needed on bridged Token-Rings, as usual. A partial NetWare Requester section listing is as follows:

```
SET NWLANGUAGE=ENGLISH
DEVICE=C:\NETWARE\LSL.SYS
RUN=C:\NETWARE\DDAEMON.EXE
device=c:\netware\lansup.sys
DEVICE=C:\NETWARE\ROUTE.SYS
DEVICE=C:\NETWARE\IPX.SYS
DEVICE=C:\NETWARE\SPX.SYS
```

IBM has a more direct approach, via the NTS/2 package, for placing ODI on top of NDIS. ODI2NDI\_NIF and *odi2ndi.sys* are respectively placed in the *protocol.ini* and *config.sys* files via the LAPS program. ODI2NDI is like ODINSUP in reverse. Rather than placing NDIS on top of ODI, ODI is positioned above NDIS. ODI2NDI differs from LANSUP because LANSUP requires the 802.2 interface of *landd.os2* (and *landlidd.os2*) between it (LANSUP) and the lower level NDIS architecture. NDIS binding can occur before the NetWare Requester with LANSUP. In contrast, ODI2NDI always binds after the NetWare Requester section in the *config.sys*. The IBM LAPS pro-

gram places the IBM directories, such as *\ibmcom*, in the front rather than at the end of the *PATH* lines illustrated in the Novell documentation.

### Interworking Onward

If LAN Services were also installed, additional lines would have been added to *config.sys* after the NetWare Requester section. Those lines load *netwksta.200* (LAN Services file system), *netbios.os2* (IBM NetBIOS), and *lsdaemon.exe* (LAN Services daemon) followed by several IBMCOM executables: *landll.exe*, *netbind.exe*, and *lanmsgsex.exe*.

Beforehand, the three IBMCOM executables preceded the NetWare Requester in last month's ODINSUP and this month's ODI2NDI examples where LAN Services was not deployed. With LAN Services, the six files mentioned must follow the NetWare Requester because the NetWare Requester file system (*nwifs.ifs*) needs to be initialized prior to loading the LAN Services file system. The presence of LAN Services also means additions to the *protocol.ini* file and possibly other configuration modifications to concurrently accommodate IBM NetBEUI and Novell NetBIOS.

What's next? The introduction of TCP/IP will open up new interoperability horizons beyond those we have so far discussed for the OS/2 platform. Which OS/2 TCP/IP package shall we choose? Novell's LAN Workplace or IBM's TCP/IP for OS/2? How does the choice impact the configuration of OS/2 network nodes and their capabilities across the enterprise? Stay tuned for adventures in OS/2 TCP/IP implementation.

*Bob Panza is a LAN consultant affiliated with EJR Computer Associates in Hoboken N.J. and The Systems Expert in Woodbury, Conn. He can be reached via CompuServe as 71611,1262.*



# Voodoo Secrets

A look at *Voodoo OS/2* and *OS/2 Secrets and Solutions* BY CHARLES BERMANT

Using personal computers represents an unending series of decisions. For example, once you have decided to move to OS/2, you might also decide to buy a book to use as a guide through the orientation process. Now, you must decide whether to use a less formal approach that provides a good foundation for using the system or invest in a larger, more thorough (and correspondingly less interesting) reference tool. Whether you choose *Voodoo OS/2* (the former) or *OS/2 Secrets and Solutions* (the latter) will depend upon your current position on the OS/2 learning curve.

### Voodoo OS/2

If you have been using OS/2 for more than a week, much of *Voodoo OS/2* will be familiar. Time spent reading this book, however, does not have to be wasted. The text is annotated by pictures, lists, and subheads, so it's easy to find what you need and easily skip over what you already know. Any self-taught OS/2 user can benefit from a quick skim through this book. For example, you may have mastered basic interface use, but have no idea what a shadow does. Scanning this book is like fast-forwarding through an orientation videotape to skip the parts about the cafeteria. As a relatively experienced user, I didn't find much unfamiliar material, but the book explains some shortcuts and concepts more clearly than I have seen in the past.

**Whether you  
choose *Voodoo OS/2* or *OS/2  
Secrets and Solutions* will  
depend upon your current  
position on the OS/2 learning  
curve.**

A lot of the advice provided is just informed common sense. The best tip I found suggests that you get a backup mouse and place it on the shelf in case the old one suddenly dies. Anyone who has faced the possibility of using OS/2 without a mouse will laud this as great advice—even if it is not strictly an OS/2 tip.

The book also provides some tips that I disagree with. For example, the author suggests that you reset the internal clock/calendar to fool a timed virus. This is bad advice. You are either safe from viruses (using appropriate software) or you are not. Changing the clock does nothing for virus protection, but only offers a false sense of security. You also get the impression that after the manuscript was three quarters of the way completed, Taylor lost interest. All he has to say about PM Terminal is "just about any commercial or

shareware program is better." This statement may be true, but PM Terminal is still useful for logging on to MCI and CompuServe or for simple file transfers. A few notes about its shortcomings and how to overcome them would have been welcome.

### OS/2 Secrets and Solutions

If *Voodoo OS/2* is a book to read once and pass on, you might keep *OS/2 Secrets and Solutions* around for a while (incidentally, it contains several pages about PM Terminal). It has much of the same background information and boasts a similar scannable format. This is a computer book in the traditional sense: You wouldn't want to actually read the whole book, but you would keep it nearby to solve problems as they arise.

As *OS/2 Secrets and Solutions* looks fairly technical, it would probably intimidate the average novice (or *Voodoo OS/2* reader). This is a shame, because the featured lists and graphs are clear and necessary to get the point across or address the questions in a thorough manner. In all cases, complicated procedures are explained in simple and direct terms, so the book stands to support you as your needs and knowledge grow.

The book includes several pages of DOS, Windows, and OS/2 compatibility tips—those little adjustments you need to make for programs to run well under OS/2. These sometimes obscure fixes



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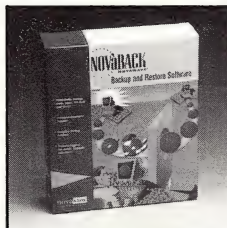
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may be impossible to find elsewhere or figure out on your own, so they can save you a lot of time and effort. The coverage of Windows is healthy and robust (including instructions on how to make OS/2 look like Windows) and, as throughout the book, does not assume the reader has a lot of prior knowledge.

Part of the reason that *OS/2 Secrets and Solutions* costs a lot more than *Voodoo OS/2* has to do with the inclusion of disks. In fact, its comparative worth has little to do with these programs. You will find something in this smattering of shareware that you can use (a few games and an anti-virus program from McAfee Associates), but nothing that you can't live without. The disks included in the book are 5.25 inches (you have to send away for 3.5-inch disks), which is both puzzling and inconvenient.

While *Voodoo OS/2* is less expensive, a better read, and contains information that is easier to assimilate, the price of *OS/2 Secrets and Solutions* is justified, not for the software, but because it has more information.

*Charles Bermant is a freelance writer specializing in technology and music.*

### RESOURCES

#### **Voodoo OS/2 (\$24.95)**

By Allen G. Taylor  
Ventana Press  
P.O. Box 2468  
Chapel Hill, NC 27515  
(919) 942-1140

READER SERVICE NO. 156

#### **OS/2 Secrets and Solutions (\$44.99)**

By Peter Dyson  
Sybex  
2021 Challenge Dr.  
Alameda, CA 94501  
(800) 227-2346

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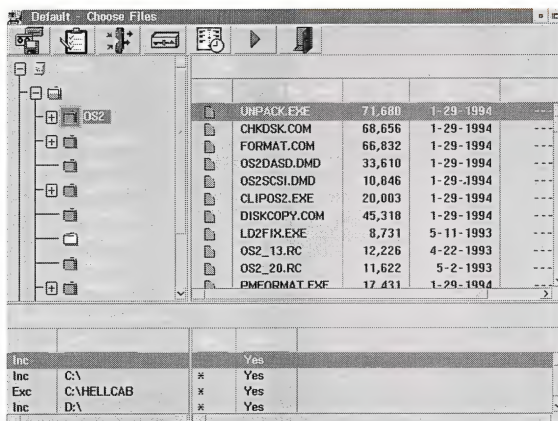
## Fastback Plus for OS/2 1.0

### OS/2 backup with cross-platform support

**S**ymantec announces the first release of the OS/2 version of their backup program Fastback Plus. The 32-bit multithreaded backup program is file-compatible with DOS and Windows versions of Fastback. Other features include a Workplace Shell drag-and-drop interface, backup speeds of up to 28MB per minute, automatic scheduling, and compression. The media backups can be stored on floppy disks, QIC 40/80 tape drives, SCSI tape drives, Bernoulli boxes, Syquest Drives, and network drives. OS/2-specific backup features include support for HPFS, extended attributes, and a Quick Crash Recovery feature that allows a complete restore even if the system is damaged.

Fastback Plus sells for \$189. It requires OS/2 2.x or higher and 2MB of hard disk space. Call Symantec at (800) 441-7234 or (503) 334-6054.

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## SmartSuite 1.1 for OS/2

### Lotus updates across the board

**L**otus Development has updated SmartSuite for OS/2 to version 1.1. The new release contains updated versions of most of the applications included in SmartSuite. New versions of Lotus 1-2-3 and Freelance Graphics, which are now at version 2.1, will be VIM and CID enabled. The new version of Lotus 1-2-3 for OS/2 will have new DataLens drivers, new C-API extensions, more SmartIcon palettes, and new @ functions. Current shipping versions of AmiPro 3.0a and cc:Mail 1.0 are also included. SmartSuite includes the Lotus Application Manager, a utility that helps facilitate switching between Lotus applications. If you

are using the current version of the OS/2 SmartSuite, call (800) 872-3387 to receive an update kit (for the price of shipping) that will give current versions of all the software. SmartSuite sells for \$795. Call Lotus Development at (404) 391-0011 or fax (404) 698-7660.

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## Quick/2 Install

### Install OS/2 in record time

**P**arallel Storage Solutions has taken the OS/2 installation files, modified them, put them on a QIC tape, and packaged them to make Quick/2 Install. The package allows you to pre-install all OS/2 drivers from the 2.11 release eliminating

any need for the original disks. The tape sells for \$299 and additional OS/2 site licenses can be purchased through PSS. Quick/2 Install will work only on Parallel Storage Solutions tape backup machines. Call (800) 998-7839 or (919) 347-7044 or fax (919) 347-4646.

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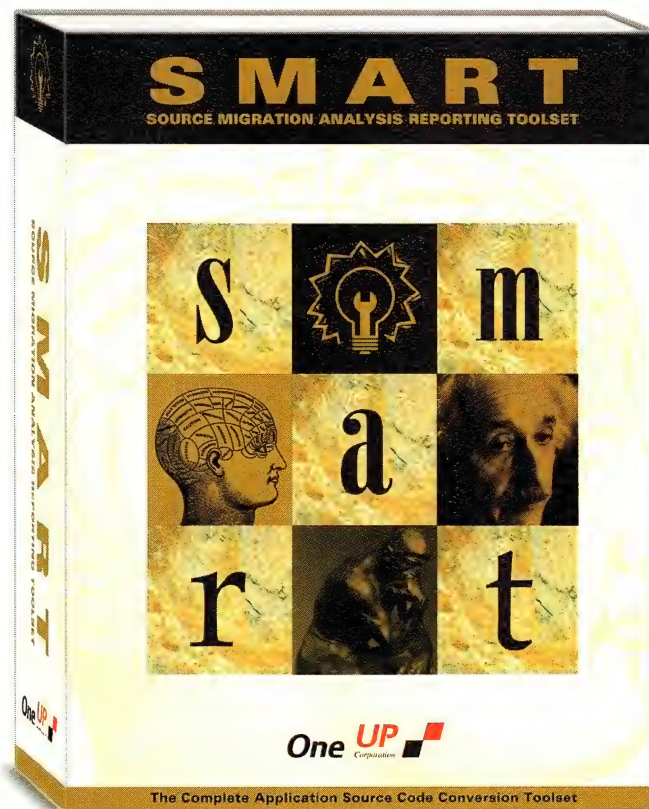
## EMS OS/2 Utility Library

### A new repository of OS/2 Shareware

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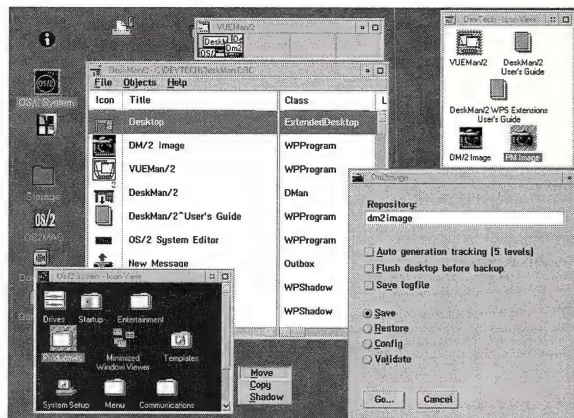
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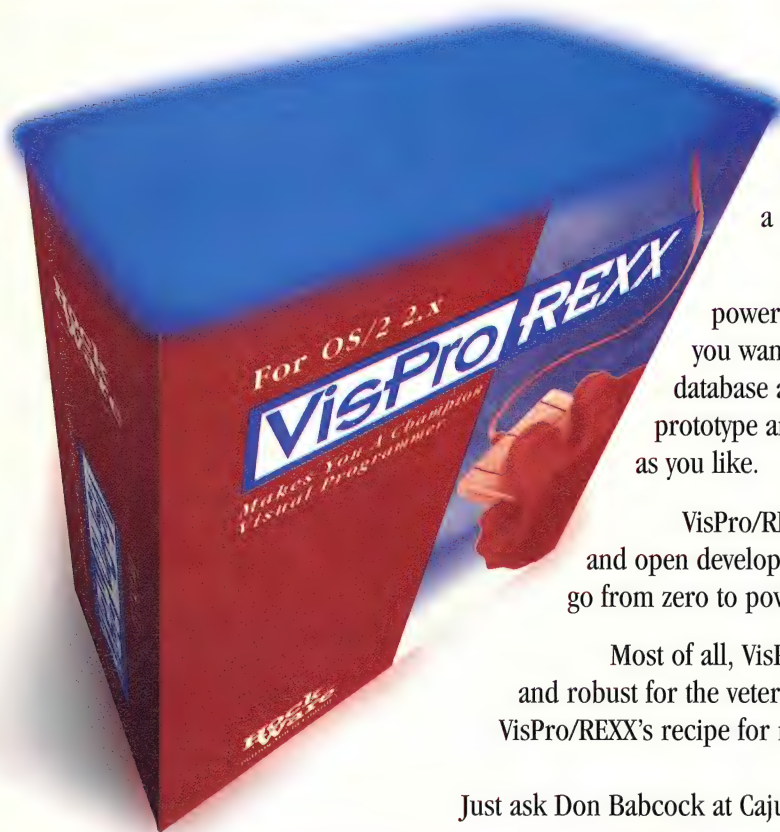




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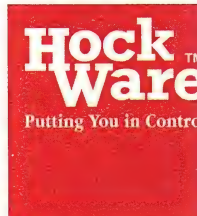
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# Never Completely Helpless

**BUILD YOUR OWN TEXT-STRING LOCATOR IN REXX** BY ALEX LANE

**O**ne corollary to Murphy's Law is that no matter how comprehensive your suite of applications is, a time may come when you are completely on your own trying to solve a problem. This month, we'll take a look at how, with REXX, you're never completely helpless.

Our discussion will be based on the following .cmd file template:

```
/* TEMPLATE.CMD */
call RxFuncAdd,
'SysLoadFuncs', 'RexxUtil',,
'SysLoadFuncs'
call SysLoadFuncs
/* insert code here! */
exit
```

This template registers all the extended built-in functions that are available in a file called *rexutil.dll*, making them available from your REXX code. For an explanation of what these lines do, see the sidebars on pp. 60 and 61. Now, let's take a look at one possible scenario.

## When was that file created?

You recall having saved a file sometime in August 1993 containing a phone number in the 303 area code that's suddenly become very important to you. Listing 1 shows how to find it using REXX.

The function **SysFileTree** collects information on all files in all subdirectories (denoted by the **FS**, respectively, in the third parame-

**The code  
executes a do instruc-  
tion that parses each  
line into a date, time,  
size, set of attributes,  
and file name.**

ter) and assigns them to a compound symbol stem we called **file** that will act as an array to hold all the found files. The element **file.0** contains the number of elements in the array. Put another way, **SysFileTree** will result in some number of lines of output. The first line is stored in **file.1**, the second in **file.2**, and so on, with the overall number of lines stored in **file.0**.

The code executes a **do** instruction that parses each line into a date, time, size, set of attributes, and file name (including path).

## Listing 1: Finding a text string.

```
/* code to insert */
call SysFileTree 'c:\*.*', file, 'FS'
do i=1 to file.0
  parse var file.i date,
                    time,
                    size,
                    attr,
                    name
  name = strip(name)
  if date >= "8/1/93" & date <= "8/31/93" then do
    call SysFileSearch '303', name, 'found'
    if found.0 \= 0 then
      say date name || ':'
    do n=1 to found.0
      say found.n
    end /* do */
  end /* if */
end /* do */

/* end of code to insert */
```



## Listing 2: Deleting files with a common extension.

```
/* code to insert */
call SysFileTree 'd:\*.foo', fooFiles, 'FSO'
if fooFiles.0 = 0 then
  say 'No files found'
else do i=1 to fooFiles.0
  say 'deleting' fooFiles.i
  rc = SysFileDelete(fooFiles.i)
  select
    when rc = 5 then
      say fooFiles.i || ': Access denied'
    when rc = 32 then
      say fooFiles.i || ': Sharing violation'
    otherwise if rc \= 0 then
      say fooFiles.i || ': Error' rc
  end /* select */
end /* do */
/* end of code to insert */
```

Note that this instruction spans five lines and that each of the first four lines end in a comma. In REXX, a comma at the end of a line acts as a continuation character. REXX replaces the comma

with a blank space and treats the next line of code as a continuation of the current line.

After parsing, the name is stripped of leading spaces and the date is checked to see if it is in the

**Say you  
wanted to delete all  
files with an extension  
of .foo from all subdi-  
rectories on your d:  
drive**

critical period. If it is, a call is made to the **SysFileSearch** function, which takes the string to search for (in this case, "303"), the file name to search, and a compound symbol stem we called **found**. As before, **found** represents an array corresponding to every instance of the search string found in the file, with **found.0** representing the number of such instances.

If a file dated within our range contains the string we're looking for, the date and file name are output to the screen, and each found string is output.

### Variation on a theme

The **SysFileTree** function allows you to search your disk for files only (as in our example), for directories only, or, by default, for files and directories. You can specify whether to search through subdirectories (as we did) or not, and whether to return date, time, and so on about a file (as we did) or simply the file path and name.

For example, let's say you wanted to delete all files with an extension of .foo from all subdirectories on your d: drive, as shown in Listing 2.

Here, the **O** option in the third parameter says to merely get file names. Then, for each file found by the call to **SysFileTree**, the **do** instruction announces deletion of

## REXXUTIL.DLL

The *rexxutil.dll* file provides OS/2 users of REXX with over two dozen additional functions that include screen manipulation, operations with files and drives, and the ability to manipulate Workplace Shell objects.

Many of the functions do much the same thing as OS/2 commands. For example, the functions **SysMkDir** and **SysRmDir** create and remove directories, respectively. Why use them, then? Because they have better exception handling than the OS/2 command equivalent. For example, say you have the following line of code in a REXX command file:

```
MD C:\FUBAR
```

If the subdirectory already exists, you'll get an error message on the screen, but the .cmd file will continue to execute! Coding the line as

```
rc = SysMkDir('C:\FUBAR')
```

will result in a return code being assigned to the variable **rc**. If **rc** is zero, for example, the call was successful; if it is five, access was denied. Subsequent code can check **rc** and take appropriate action.

You can find out more about all the functions in *rexxutil.dll* by viewing the *rexx.inf* file on your machine.



## REXX and DLLs

**M**ost of REXX resides in dynamic link libraries (DLLs). DLLs are files that contain executable code packaged as functions. The code in DLLs can be called from processes running under OS/2. For example, the REXX interpreter and the built-in functions and instructions are packaged in a file called *rexx.dll*. Additional OS/2 REXX functions are packaged in *rexxutil.dll* (discussed in the sidebar on p. 60). DLLs are one way that multiple OS/2 processes can share resources; If two processes are running REXX command files, they will both use *rexx.dll*, which is loaded automatically.

DLLs can provide REXX users with much functionality. And, while you can't create DLLs using REXX, it's quite simple to make use of DLLs in your REXX code by using the built-in **RxFuncAdd** function. Let's look at the function call from the code in the main part of the column:

```
call RxFuncAdd
  'SysLoadFuncs',
  'RexxUtil',
  'SysLoadFuncs'
```

This line of code registers a function called **SysLoadFuncs**. Once registered, this function will now be accessible from REXX. The remaining two parameters in the function call indicate that the function is found in the *rexxutil.dll* under the name **SysLoadFuncs**. (This practice may look redundant, but a function in a DLL can be registered using different names in REXX, with the result that a function in a DLL may act as an "entry point" for two or more REXX functions.)

It turns out that **SysLoadFuncs** is a function that, when called from REXX, registers all the other functions in the DLL without you having to know about it. That's the reason for the next line of code:

```
call SysLoadFuncs
```

These two lines of code register all the functions in the *rexxutil.dll* file. If your code only makes use of one function from that DLL (for example, **SysFileTree**), you can register just the one function with the following line of code:

```
call RxFuncAdd
  'SysFileTree',
  'RexxUtil',
  'SysFileTree'
```

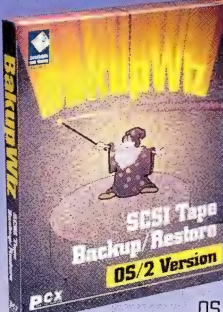
the file, followed by a call to **SysFileDelete**. The return code from **SysFileDelete** is then examined to see whether an error occurred while trying to delete the file and, if so, a message is sent to the console.

**SysFileTree** is more involved than we can cover here. I'll just mention that you can search for and set file attributes in addition

to the functions we've discussed. The *rexx.inf* file contains complete information about **SysFileTree** (not to mention the rest of REXX).

*Alex Lane is a consultant and writer, and a contributing editor to OS/2 Magazine and AI Expert. He can be reached at CompuServe 75715,1370, or Internet as alex.lane@springs-board.org.*

### Your One Stop for OS/2 Backup...



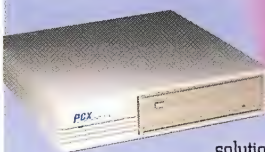
# BakupWiz

OS/2 BakupWiz is the SCSI tape backup solution you have been looking for! Designed to exploit OS/2's multiple threading, BakupWiz gives you a quick and reliable method to completely back up your OS/2 system. HPFS and FAT file systems are supported and Extended Attributes, Long File Names, System files, and the Workplace Shell are backed up. You can even restore your entire OS/2 boot volume from tape!

Ease of use is another of OS/2 BakupWiz's strong points. A simple, character oriented menu interface and command line operation are provided. OS/2 BakupWiz comes with support for most 1/4", 4mm (DAT), and 8mm tape devices. BakupWiz can also backup to other hard drives, file servers, minis/mainframes via TCP/IP, and removable drives including Bernoulli, Syquest, diskette, and magneto optical. There is even a version of OS/2 BakupWiz that supports many of the automatic tape changer mechanisms. Any SCSI host adapter that has an ADD driver can be used with OS/2 BakupWiz.

PCX also works hard to keep you satisfied after the sale with outstanding customer support. Being a small and aggressive company means that we can respond to your needs that much quicker.

OS/2 BakupWiz is priced at \$149 (autochanger version \$399). PCX also has a **competitive upgrade program** where you can purchase OS/2 BakupWiz for just \$49 by sending in an eligible competing product. We offer a 30 day money back guarantee to protect you in case OS/2 BakupWiz does not work for you! Call our toll free number and order today!



# PortaTape

PortaTape is your complete portable tape backup solution for OS/2. Using high speed SCSI tape devices, the PortaTape line offers capacities ranging from 250 megabytes to 10 gigabytes. Offering backup speeds from 6 to over 18 megabytes per minute when using a high speed, bidirectional printer port, units in the PortaTape series are priced from \$995.

Members of the PortaTape series utilize a range of SCSI tape drives including 1/4 inch, 4mm, and 8 mm mounted in low profile external enclosures. Connection to the host system is via the system's parallel printer port, which may be utilized concurrently with tape drive operation. A copy of OS/2 BakupWiz is included with each PortaTape.

PCX also markets a complete line of standard SCSI tape backup units ranging in capacity from 250MB to over 10GB. Available in both internal and external models, these units are priced from \$550. For very large backup needs, PCX offers robotic tape loader mechanisms from 48GB to over 1 terabyte.

**FOR MORE INFORMATION OR TO ORDER CALL:**  
**1-800-800-4PCX**

**PCX** 3525 Del Mar Heights Road, Suite 313, San Diego, CA 92130 • (619) 259-9797 • (619) 481-6474 FAX

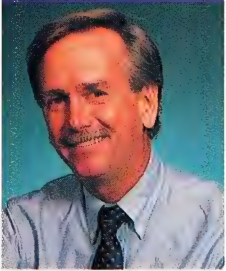
Shipping is non-refundable. No cancellations on special order items. 20% restocking fee on hardware refunds within 30 days. No refunds or exchanges after 30 days. Prices subject to change.





Reader Service No. 29





# Learning more about OS/2

OS/2 EDUCATION COMES IN A VARIETY OF FLAVORS BY DICK CONKLIN

**A**n OS/2 user is a student from day one—from the first demonstration, to buying the product, installing it, and beginning to explore its features. Further education comes in a variety of formats and topics, ranging from OS/2's own built-in tutorial to a week-long course in programming.

In the February issue ("Information Center," pp. 78-79), we listed books on OS/2 for people who prefer to go the low-cost read-it-yourself route. Table 1, in this column, lists more formal sources of OS/2 education. In the self-study arena, you'll find computer-based training (CBT), on-line courses, and video and audio cassettes.

Hundreds of instructor-led classroom courses are offered on OS/2

topics. Some are taught in facilities owned by the course provider and most can be brought on-site if your company needs mass training. Some of the courses listed in Table 1 quote a per-student tuition rate and others a per-class rate. In most cases, a course provider can bid on a custom package that meets your needs. Some make their course materials available or offer teach-the-teacher classes for people who want to do their own in-house training. We've listed only OS/2 topics here, but most providers offer courses in related topics, such as OS/2 applications, local-area networks, PC hardware, support, and a variety of programming topics.

If you want to create your own computer-based training or on-

line tutorials, I suggest that you look into OS/2's Information Presentation Facility (IPF). IPF files can be created with text and graphics with the ability to branch to selected topics. All you need to start an IPF session is OS/2's built-in VIEW command. IPF authoring tools are part of the Developer's Toolkit for OS/2 and the IBM Developer's Connection CD-ROM. The IPF Guide and Reference publication can be ordered from IBM as S10G-6262.

*Dick Conklin is editor-in-chief of OS/2 Developer, contributing editor to OS/2 Magazine, and author of three OS/2 books. He can be reached at CompuServe 76711,1005 or Internet os2mag@vnet.ibm.com.*

**Table 1: OS/2 courses offered by various providers.**

For more information, contact the companies directly. Tuition amounts are per-person in U.S. dollars (unless otherwise noted).

| Company:                   | Contact Information:   | Class locations: | Course Name                                      | Days | Tuition | Code |
|----------------------------|------------------------|------------------|--------------------------------------------------|------|---------|------|
| Adaptive Research & Design | Tel: (305) 899-0070    | Miami, Fla.      | OS/2 Getting Started, User Course                | 1.0  | \$295   |      |
|                            | Fax: (305) 892-8669    | or on-site.      | OS/2 Administrator's Course                      | 2.0  | \$795   |      |
|                            | READER SERVICE NO. 167 |                  | OS/2 LAN Server 3.0 for Administrators           | 3.0  | \$1,195 |      |
|                            |                        |                  | Advanced LAN Server: Advanced Performance Tuning | 2.0  | \$895   |      |
|                            |                        |                  | REXX Programming                                 | 2.0  | \$895   |      |
|                            |                        |                  | ANSI C Programming                               | 4.0  | \$1,595 |      |
|                            |                        |                  | OS/2 Presentation Manager Programming in C       | 5.0  | \$1,995 |      |
| Computer Workshop          |                        |                  | OS/2 Multimedia Programming                      | 5.0  | \$1,995 |      |
|                            | Tel: (708) 971-0004    | On-site, Ill.    | OS/2 Training - Introduction                     | 1.0  | \$195   |      |
|                            | (312) 441-2770         |                  |                                                  |      |         |      |
|                            | Fax: (708) 971-0065    |                  |                                                  |      |         |      |
|                            | READER SERVICE NO. 168 |                  |                                                  |      |         |      |



# Information Center

| Company:                    | Contact Information:                   | Class locations: | Course Name                                         | Days | Tuition | Code        |
|-----------------------------|----------------------------------------|------------------|-----------------------------------------------------|------|---------|-------------|
| Dill & Company              |                                        |                  |                                                     |      |         | (per class) |
|                             | Tel: (817) 491-2147                    | on-site, U.S.    | OS/2 and PM Programming Using Micro Focus COBOL 4.0 |      | \$2,800 |             |
|                             | 72370.251@CompuServe.Com               |                  |                                                     |      |         |             |
|                             | READER SERVICE NO. 169                 |                  |                                                     |      |         |             |
| G. F. Gargiulo & Associates |                                        |                  |                                                     |      |         | (per class) |
|                             | Tel: (800) 254-5578                    | On-site, U.S.    | Programming in OS/2 REXX                            | 4.0  | \$4,000 |             |
|                             | (203) 646-9531                         |                  |                                                     |      |         |             |
|                             | Fax: (203) 646-2408                    |                  |                                                     |      |         |             |
| Huffman & Associates        |                                        |                  |                                                     |      |         |             |
|                             | Tel/Fax:                               | On-site, Calif.  | How to Use OS/2                                     | 1.0  | \$150   |             |
|                             | (805) 461-1053 central coast.          |                  |                                                     |      |         |             |
|                             | 71542.2361@compuserve.com              |                  |                                                     |      |         |             |
| Infotec Training Institute  |                                        |                  |                                                     |      |         |             |
|                             | Tel: (800) 282-7990                    | Southern Calif., | OS/2 for Users                                      | 2.0  | \$430   |             |
|                             | (714) 755-7120 San Francisco,          |                  |                                                     |      |         | 3.0 \$645   |
|                             | Fax: (714) 755-7155 and Seattle, Wash. |                  |                                                     |      |         | 5.0 \$1,075 |
| IS International Inc.       |                                        |                  |                                                     |      |         |             |
|                             | Tel: (407) 994-4373                    | South Fla. or    | Introduction to OS/2 2.x PM Programming Using C     | 4.5  | \$1,350 |             |
|                             | Fax: (407) 994-8374 on-site worldwide. |                  |                                                     |      |         | 4.5 \$1,350 |
|                             | READER SERVICE NO. 173                 |                  |                                                     |      |         |             |
| KnowHow Solutions           |                                        |                  |                                                     |      |         |             |
|                             | Tel: (818) 597-9176                    | Computer-based   | Understanding OS/2                                  |      | \$90    |             |
|                             | Australia:                             |                  |                                                     |      |         |             |
|                             | (61) 2-907-9013                        |                  |                                                     |      |         |             |
| Mark Minasi & Company       |                                        |                  |                                                     |      |         |             |
|                             | Tel: (703) 276-8940                    | Washington, D.C. | Supporting OS/2 (taught in Washington, D.C. area)   | 2.0  | \$795   |             |
|                             | Fax: (703) 276-1014 and on-site        |                  |                                                     |      |         | 2.0 \$5,000 |
|                             | READER SERVICE NO. 175                 |                  |                                                     |      |         |             |



# Information Center

| Company:                         | Contact Information:   | Class locations:                                                                                                       | Course Name                                 | Days | Tuition     | Code |
|----------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|------|-------------|------|
| OneOnOne Computer Training       | Tel: (800) 424-8668    | Self-paced                                                                                                             | How to Use OS/2, 2.x (audio cassette)       | 1.0  | \$195       |      |
|                                  | (708) 628-0500         | (audio).                                                                                                               |                                             |      |             |      |
|                                  | Fax: (708) 628-0550    |                                                                                                                        |                                             |      |             |      |
|                                  | READER SERVICE NO. 176 |                                                                                                                        |                                             |      |             |      |
| One Up Corp.                     | Tel: (800) 678-0187    | On-site worldwide. OS/2 Application Migration Workshops: Call for information (customized to customer's requirements). |                                             |      |             |      |
|                                  | (214) 620-1133         |                                                                                                                        |                                             |      |             |      |
|                                  | Fax: (214) 620-8218    |                                                                                                                        | OS/2 Basics for End Users                   | 1.0  | Call        | A101 |
|                                  | READER SERVICE NO. 177 |                                                                                                                        | Installing, Using and Customizing OS/2      | 3.0  | Call        | A102 |
|                                  |                        |                                                                                                                        | OS/2 Technical Support                      | 2.0  | Call        | A103 |
|                                  |                        |                                                                                                                        | C Language Programming                      | 5.0  | Call        | A110 |
|                                  |                        |                                                                                                                        | C++ Programming                             | 5.0  | Call        | A115 |
|                                  |                        |                                                                                                                        | OS/2 and PM Programming                     | 5.0  | Call        | A120 |
|                                  |                        |                                                                                                                        | Advanced OS/2 and PM Programming            | 5.0  | Call        | A121 |
|                                  |                        |                                                                                                                        | SOM WPS Programming for OS/2                | 5.0  | Call        | A125 |
|                                  |                        |                                                                                                                        | OS/2 LAN Server Administration              | 5.0  | Call        | A201 |
|                                  |                        |                                                                                                                        | DB2/2 Administration                        | 4.0  | Call        | A401 |
|                                  |                        |                                                                                                                        |                                             |      |             |      |
| PC Clean                         | Tel: (800) 881-6897    | Fort Lauderdale, Fla. or on-site in                                                                                    | Up and Running with OS/2                    | 1.0  | \$249       |      |
|                                  | (305) 748-9977         |                                                                                                                        |                                             |      |             |      |
|                                  | Fax: (305) 748-9991    | South Fla.                                                                                                             |                                             |      |             |      |
|                                  | READER SERVICE NO. 178 |                                                                                                                        |                                             |      |             |      |
| PC Dialogs                       |                        |                                                                                                                        |                                             |      | (per class) |      |
|                                  | Tel: (212) 663-3459    | On-site, N.Y.                                                                                                          | OS/2 2.x Fundamentals                       | 2.0  | \$3,000     |      |
|                                  | bpesner@panix.com      | Metro area.                                                                                                            | OS/2 2.x for the Support Team               | 2.0  | \$3,000     |      |
|                                  | READER SERVICE NO. 179 |                                                                                                                        | C Programming for OS/2                      | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | OS/2 Kernel Programming                     | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | OS/2 PM Programming - Basic                 | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | OS/2 PM Programming - Advanced              | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | OS/2 System Object Model Programming        | 3.0  | \$4,500     |      |
|                                  |                        |                                                                                                                        | Basic IBM LAN Server Administration         | 3.0  | \$4,500     |      |
|                                  |                        |                                                                                                                        | Advanced IBM LAN Server Administration      | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | Communications Manager/2 Configuration      | 3.0  | \$4,500     |      |
|                                  |                        |                                                                                                                        | OS/2 EHLLAPI Programming                    | 2.0  | \$3,000     |      |
|                                  |                        |                                                                                                                        | Advanced Program-to-Program                 |      |             |      |
|                                  |                        |                                                                                                                        | Communication Programming                   | 5.0  | \$7,500     |      |
|                                  |                        |                                                                                                                        | TCP/IP for OS/2 Concepts and Administration | 2.0  | \$3,000     |      |
|                                  |                        |                                                                                                                        | OS/2 REXX Programming                       | 3.0  | \$4,500     |      |
|                                  |                        |                                                                                                                        | VX-REXX Programming                         | 5.0  | \$7,500     |      |
| Productivity Point International | Tel: (800) 848-0980    | Multiple U.S. & Canada training centers and on-site.                                                                   | OS/2 2.1 Introduction                       | 1.0  | \$250       |      |
|                                  | (708) 920-0980         |                                                                                                                        | OS/2 2.1 Advanced                           | 1.0  | \$250       |      |
|                                  | Fax (708) 920-1042     |                                                                                                                        | OS/2 Comm Manager                           | 1.0  | \$250       |      |
|                                  | READER SERVICE NO. 180 |                                                                                                                        | OS/2 LAN Concepts                           | 0.5  | \$125       |      |
|                                  |                        |                                                                                                                        | OS/2 LAN User                               | 0.5  | \$125       |      |
|                                  |                        |                                                                                                                        | OS/2 Query Manager                          | 2.0  | \$500       |      |



# Information Center

| Company:                          | Contact Information:                                                                                                                      | Class locations:                                       | Course Name                                        | Days | Tuition | Code        |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------|------|---------|-------------|
|                                   |                                                                                                                                           |                                                        |                                                    |      |         | (UK Pounds) |
| QA Training                       | Tel: (44) 285-655888<br>or 641052<br>Fax: (44) 285-650537<br>READER SERVICE NO. 181                                                       | U.K. and on-site<br>worldwide.                         | Introduction to OS/2 2.x                           | 1.0  | £240    |             |
|                                   |                                                                                                                                           |                                                        | Supporting OS/2                                    | 4.0  | £960    |             |
|                                   |                                                                                                                                           |                                                        | Supporting OS/2 Communications Manager             | 4.0  | £760    |             |
|                                   |                                                                                                                                           |                                                        | OS/2 and Presentation Manager Programming          | 5.0  | £1195   |             |
|                                   |                                                                                                                                           |                                                        | OS/2 APPN and APPC Cooperative Programming         | 4.0  | £1175   |             |
|                                   |                                                                                                                                           |                                                        | Supporting IBM DB2/2                               | 3.0  | £750    |             |
| QED Information Sciences, Inc.    | Tel: (800) 343-4848<br>(617) 237-5656<br>Fax: (617) 235-0826<br>READER SERVICE NO. 182                                                    | Boston,<br>Philadelphia,<br>Cleveland, and<br>on-site. | OS/2 System Overview                               | 2.0  | \$695   |             |
|                                   |                                                                                                                                           |                                                        | OS/2 for End-Users                                 | 3.0  | \$995   |             |
|                                   |                                                                                                                                           |                                                        | OS/2 System Support                                | 2.0  | \$695   |             |
|                                   |                                                                                                                                           |                                                        | OS/2 Rexx                                          | 3.0  | \$995   |             |
|                                   |                                                                                                                                           |                                                        | OS/2 Presentation Manager                          | 5.0  | \$1,395 |             |
|                                   |                                                                                                                                           |                                                        | OS/2 DB2/2                                         | 5.0  | \$1,395 |             |
| SE International, Inc.            | Tel: (800) 473-4685<br>(407) 278-2204<br>Fax: (407) 278-3919<br>READER SERVICE NO. 183                                                    | Boca Raton, Fla.<br>or on-site.                        | GUI Application Development with PM and C          | 5.0  | \$1,875 |             |
|                                   |                                                                                                                                           |                                                        | GUI Application Development with PM and Gpf        | 5.0  | \$1,350 |             |
|                                   |                                                                                                                                           |                                                        | Advanced GUI Programming with Gpf                  | 3.0  | \$1,135 |             |
|                                   |                                                                                                                                           |                                                        | System Object Model / Workplace Shell Programming  | 5.0  | \$1,875 |             |
| Skill Dynamics,<br>an IBM Company | Tel: (800) 426-8322<br>Extension 1630<br>Fax: (800) 426-9006<br>*Call for pricing and<br>complete descriptions.<br>READER SERVICE NO. 184 | IBM and Skill<br>Dynamics centers<br>and on-site.      | OS/2 DCE Administration Workshop                   | 4.5  | \$1,800 | G3835       |
|                                   |                                                                                                                                           |                                                        | OS/2 LAN Requester User Workshop                   | 0.5  | \$125   | G4161       |
|                                   |                                                                                                                                           |                                                        | OS/2 LAN Server Planning and Installation Workshop | 2.0  | \$600   | G4370       |
|                                   |                                                                                                                                           |                                                        | OS/2 Communications: Networking                    | 3.0  | *       | G4500       |
|                                   |                                                                                                                                           |                                                        | OS/2 Communications: Networking Workshop           | 4.0  | \$1,440 | G4501       |
|                                   |                                                                                                                                           |                                                        | OS/2 LAN Server Administration Workshop - I        | 3.0  | \$900   | G4360       |
|                                   |                                                                                                                                           |                                                        | OS/2 LAN Server Administration Workshop - II       | 5.0  | \$1,600 | G4560       |
|                                   |                                                                                                                                           |                                                        | Integrating NetWare and OS/2 LAN Server            | 2.0  | \$795   | G4570       |
|                                   |                                                                                                                                           |                                                        | OS/2 LAN Server Performance Workshop               | 4.0  | \$1,300 | G4760       |
|                                   |                                                                                                                                           |                                                        | Printing with OS/2                                 | 1.0  | *       | K2517       |
|                                   |                                                                                                                                           |                                                        | Introduction to C Programming - DOS and OS/2       | 4.5  | \$1,340 | K3604       |
|                                   |                                                                                                                                           |                                                        | Advanced C Programming - DOS & OS/2                | 4.5  | \$1,440 | K3605       |
|                                   |                                                                                                                                           |                                                        | C++ Language for DOS                               | 4.5  | \$1,335 | K3606       |
|                                   |                                                                                                                                           |                                                        | SOMObjects Developer Toolkit Workshop              | 3.0  | \$1,250 | N1602       |
|                                   |                                                                                                                                           |                                                        | Developing Help and                                |      |         |             |
|                                   |                                                                                                                                           |                                                        | on-line Documents Using OS/2 IPF                   | 3.0  | \$750   | N1680       |
|                                   |                                                                                                                                           |                                                        | Presentation Manager 2.x for Software Developers   | 5.0  | \$1,575 | N1688       |
|                                   |                                                                                                                                           |                                                        | SAA CUA User Interface Design for OS/2 Environment | 2.0  | \$600   | N1735       |
|                                   |                                                                                                                                           |                                                        | OS/2 2.x for Software Developers                   | 5.0  | \$1,575 | N1740       |
|                                   |                                                                                                                                           |                                                        | Presentation Manager Device Drivers                | 5.0  | \$1,575 | N1742       |
|                                   |                                                                                                                                           |                                                        | OS/2 Problem Diagnosis and Resolution Workshop     | 5.0  | \$1,575 | N1743       |
|                                   |                                                                                                                                           |                                                        | Presentation Manager: Windowing and Graphics       | 5.0  | \$1,575 | N1744       |
|                                   |                                                                                                                                           |                                                        | Workplace Shell Programming with SOM               | 5.0  | \$1,575 | N1745       |
|                                   |                                                                                                                                           |                                                        | OS/2 2.x for 1.x Developers                        | 5.0  | \$1,575 | N1746       |
|                                   |                                                                                                                                           |                                                        | OS/2 Kernel Debugging                              | 4.0  | \$1,260 | N3052       |
|                                   |                                                                                                                                           |                                                        | DB2/2 Query Manager Workshop                       | 2.0  | \$630   | P1046       |
|                                   |                                                                                                                                           |                                                        | OS/2 Extended Services Database Coding Workshop    | 3.0  | \$1,050 | P1048       |
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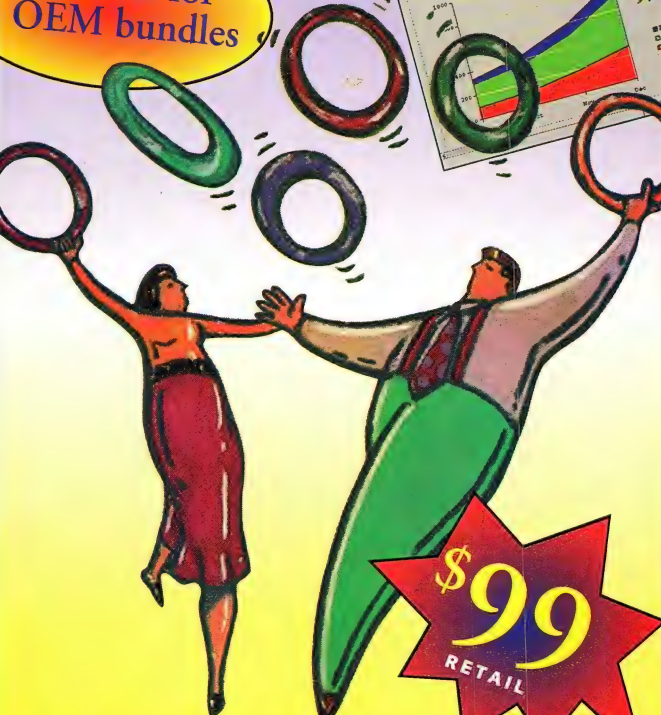
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# How *config.sys* helps OS/2 control hardware

DEVICE, BASEDEV, AND IFS OH MY! BY MARK MINASI

In the last issue, I started to take a look at the *config.sys* file by examining the **set** commands. This month, I'll continue by focusing on the **device**, **basedev**, and **ifs** commands.

Once the SET statements have been removed, I can see that my *config.sys* contains a number of **device=**, **basedev=**, and **ifs=** statements. For example, I've got **device=mouse.sys**, **pointdd.sys**, **vcom.sys**, and so on. I've got **basedev** statements like **basedev=ibm1s506.add**, and **aha 154x.add**. We'll also examine the two **ifs** statements, **ifs=hpfs.ifs** and **ifs=cdfs.ifs**.

The **device** statements perform the same basic function they do under DOS—they load a device driver. As to what, exactly, a device driver is, let's briefly go back in time to 1983, when DOS 2.0 was under construction.

DOS 2.0 was the first "modern" DOS, meaning it was the first one built by Microsoft and IBM. (The first DOS was basically farmed out to a contractor.) Microsoft built DOS 2.0 for the power PC of the time. In 1983, a PC might have had a pair of floppy drives, a hard disk under 32MB, a text-based video subsystem of some kind, parallel ports, serial ports, and a U.S.-type keyboard. But Microsoft knew the microcomputer world changes rapidly and they wanted DOS to be able to support new

**The idea was  
that a device driver  
was a kind of back door  
for DOS expansion.**

devices without major revisions to the DOS kernel. As funny as it sounds, you couldn't run many add-in cards for the PC—hard disks, memory cards, and the like—without patching DOS with DEBUG, or just throwing out the shrink-wrap DOS altogether and replacing it with one supplied by the manufacturer. The idea was that a device driver was a kind of back door for DOS expansion.

Consider the kinds of devices you see on PCs today and it becomes clear that Microsoft was right to add the device driver capability. Nearly every PC today has a mouse, but DOS has no built-in mouse-support—a separate device driver is needed. OS/2 has device driver support for two reasons: to support new kinds of hardware and to support variations within hardware types. In the first case, imagine that someone invented a three-dimensional pointing device. Such a device's driver would have to tell the OS/2

system how to read the signals coming from the pointing device, then provide a programming interface that allowed applications to be written for it. You see, calls in the OS/2 API will handle a two-dimensional pointing device, but not a three-dimensional device. So, the device driver would have to provide a whole new API for this new pointing device.

The second kind of device driver does not necessarily support a new kind of hardware. Instead, it handles the variation within a hardware type. For example, OS/2's support for particular types of mice is not built into the operating system, simply because so many different mice exist.

Speaking of mice, a number of drivers in *config.sys* are relevant to them. *Pointdd.sys*, *mouse.sys*, and *vmouse.sys* are the names of the mouse drivers on my system (yours may have different names if you don't have a Microsoft mouse). *Pointdd.sys* supports the pointing device, as I explained a paragraph or two back, *mouse.sys* supports the Microsoft mouse itself, and *vmouse.sys* is a virtual mouse driver.

Virtual drivers are some of the foundations of OS/2's DOS support. The DOS programs that OS/2 runs are built with a somewhat solipsistic view of the world. DOS programmers build DOS programs



to use the system's hardware with no consideration of other programs. Left to themselves, the DOS programs that run under OS/2 would all write to the screen at the same time, causing a video mess. They would grab each other's keystrokes making issuing commands a challenge and they'd all send output to the printer simultaneously, leading to a kind of "document integration" that I don't think anyone intended.

To combat that problem, OS/2 gives each DOS program a "virtual PC" to work with. OS/2 builds these virtual PCs out of "virtual devices," which are, essentially, pieces of software that act as pieces of hardware. For example, most DOS programs poll the keyboard constantly, trolling for keyboard input. OS/2 should allow DOS programs in the foreground access to the keyboard but DOS programs in the background will never find a keystroke waiting for them. OS/2's virtual keyboard driver is just a small program that, when you're in the foreground and you poll the keyboard, gives you actual access to the keyboard; but if you're in the background, it answers all your "are there any keystrokes for me?" queries with "no."

OS/2 includes virtual keyboard, video, disk, and other drivers. Your OS/2 *config.sys* may contain VEMM (a virtual expanded memory driver), VXMS and VDPMI (virtual drivers to allow access to extended memory), VCOM (serial port support), VCDROM, and VSVGA (support for CD-ROM and super VGA).

*Dos.sys* first appeared in OS/2 1.2. At the time, Microsoft said it enabled OS/2 to swap out the single DOS session (OS/2 1.x could only run one DOS program at a time) to disk, something that OS/2 1.0 and 1.1 couldn't do. *Testcfg.sys* runs a quick inventory of your hardware to check driver compatibility, which is most important when you've got SCSI devices.

*Com.sys* enables the serial ports. For some reason, OS/2 has always supported parallel ports right in the base system, but you must load serial-interface support separately.

*Config.sys* contains several statements that begin with **basedev=** that first appeared in OS/2 2.0. **basedev** statements load programs that are somewhat like the BIOS under DOS in that they're low-level device-control programs of fundamental importance to the system. The *ibm1s506.add* file supports your hard disk, if you've got an ISA bus PC. S506 refers to the type of disk-interface most commonly found on ISA bus machines, the Shugart Technologies 412/506 hard-disk interface. (OS/2 owners running OS/2 on a Micro Channel machine do not have this driver.) People who used OS/2 2.0 on an ISA bus machine often noticed that their hard disks ran slowly but noisily and their disks emitted grunts and groans that they'd not emitted under DOS. In response, IBM quickly put a revision of *ibm1s506.add* on CompuServe and on IBM's bulletin board. If you have a SCSI host adapter on your system, you'll see *os2scsi.add*, a general OS/2 SCSI manager. In addition, you'll have a **basedev** for your particular SCSI host adapter. For example, my Adaptec 1742 uses the *aha17xx.add* or *aha154x.add* driver, depending on whether it's running in enhanced mode or standard mode.

The **ifs** statements support OS/2's Installable File System (IFS). Under IFS, vendors can write drivers to allow OS/2 to support new file systems.

OS/2's default file system—the one that's supported in the kernel—is the familiar File Allocation Table (FAT) system. The FAT is familiar, but it's limited by its 8.3 file-naming conventions, miserably laid-out file allocation information (there's a backup for the FAT itself, but the backup sits phys-

ically next to the primary FAT; as a result, anything that impacts the primary FAT usually affects the backup FAT as well), clunky space-allocation system, and other "features" too numerous to mention here. OS/2 doesn't require that you live with the FAT, however, and includes support for an optional file system called the High Performance File System (HPFS). If you're using HPFS, then the line **ifs=c:\os2\hpfs.ifs** must be in your *config.sys* or OS/2 won't be able to recognize your hard disk. In contrast, however, if you're not using HPFS, you should remove that line from your *config.sys*, because the *hpfs.ifs* driver takes up about 500K of memory.

If you have a CD-ROM—and you should, because the whole world's going CD-ROM—then you'll also have an **ifs=cdfs.ifs** statement in your *config.sys*. DOS only adds a TSR that slaps CD-ROM support onto the side of the existing operating system, while the IFS feature of OS/2 makes it possible for OS/2 to build CD-ROM support right into the operating system.

The **device**, **basedev**, and **ifs** statements in *config.sys* allow you to configure OS/2 so that it can work with virtually any 386-based PC configuration. Loading BIOS-like code from **basedev** makes it easy to perform the equivalent of a BIOS upgrade without screwdrivers, **device** allows OS/2 to support a wide variety of new devices, and **ifss** makes OS/2 able to present non-standard storage devices, like LANs and CD-ROMs, with the same interface that standard disks receive.

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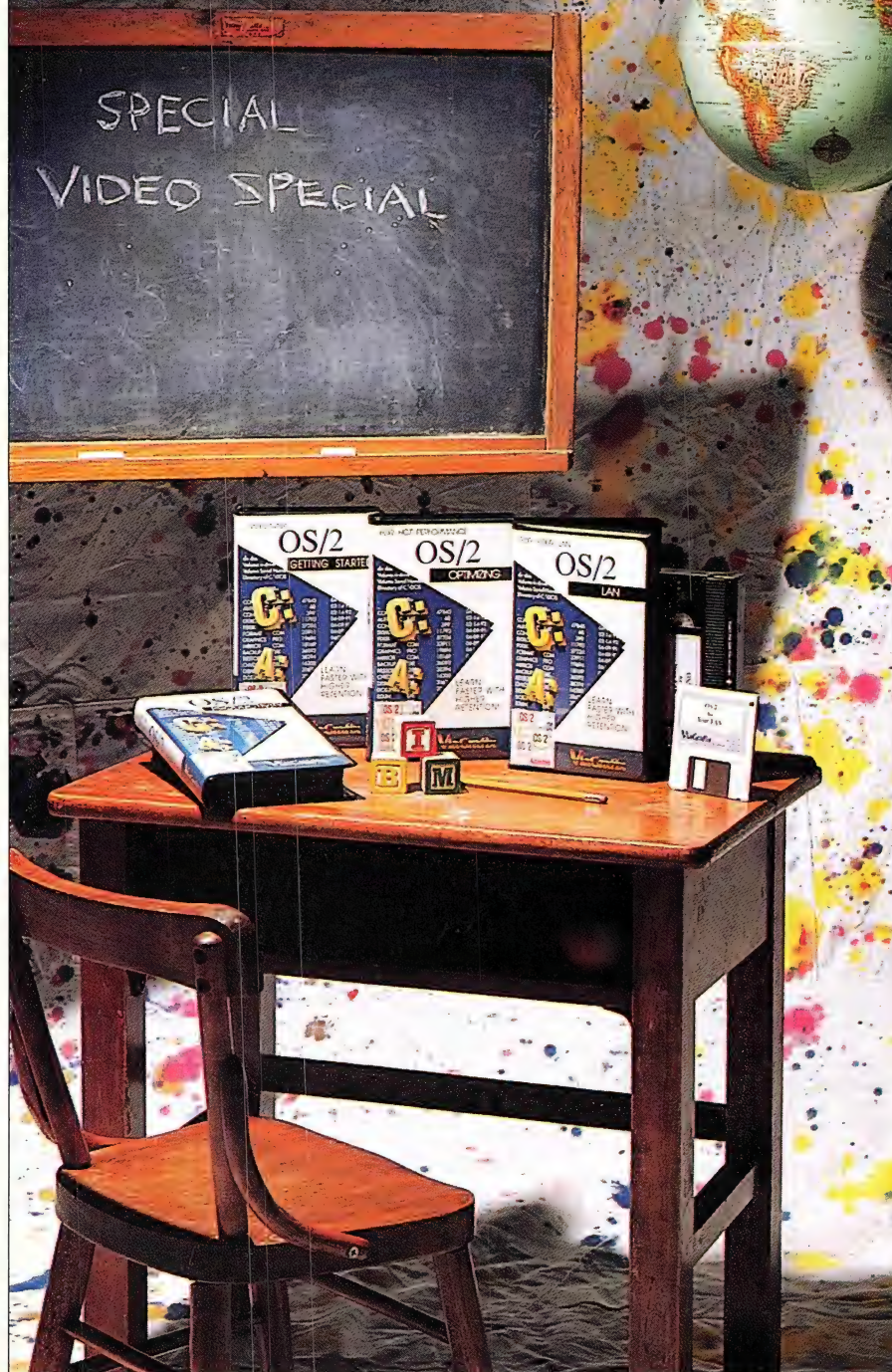
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Tips & Tricks cont'd from p. 78

**A:** Besides knowing how the PCMCIA drivers work and fit together, you should know about some specifics on how the drivers load and how they interact with each other and with OS/2. The most common problem getting PCMCIA cards to work is the ordering of the device driver statements in *config.sys*.

There is no hard-and-fast rule for ordering these statements, since the drivers vary between card and computer manufacturers in general (I'm including *com.sys* here as well because modems are typical PCMCIA cards).

You should also be aware of some other aspects of PCMCIA. First, each computer and set of drivers are different. I would suggest giving the installation programs and instructions for these drivers a try first. If it doesn't work, then try this ordering:

- 1) *Pcmcia.sys* (OS/2's Card Services provided by OS/2)
- 2) *Com.sys* (serial-port driver provided by OS/2)
- 3) [Card driver provided with PCMCIA card]
- 4) [Socket Service driver(s) provided with computer]

Another important point is that OS/2 2.1 contained a bug in the *com.sys* device driver. The OS/2 installation program would install *pcmcia.sys*, followed by *com.sys* in *config.sys*.

The bug in the COM driver prevented it from working in this order. If you have OS/2 2.1, you will need to place *com.sys* first. This problem was fixed in the OS/2 2.1 Service Pak and in OS/2 2.11. So, if you have OS/2 2.11 (the Service Pak brings you to 2.11 level), *pcmcia.sys* should come before *com.sys*. If you are installing the Service Pak and have a previously working PCMCIA modem, you must manually swap the statements.

## Extended Attributes (EAs) are a file-system construct that allows data to be attached to files

### PROAUDIO SPECTRUM

**Q:** I have a ProAudio Spectrum card, but can't get any sound out of it in a Win-OS/2 session.

**A:** This problem can usually be fixed by changing *vdmad.386* to *\*vdmad* in your *system.ini* file, located in the *\mdos\winos2* directory.

### INF TO TEXT

**Q:** I have some INF files that were given to me, but I want to convert them to plain-text files. How do I do this if I don't have the source code?

**A:** I found a utility program on CompuServe called *infcnb.zip*. It can be found in OS2DF1 forum in Library 7. It will convert *.inf* and *.hlp* files to ASCII text.

### EXTENDED ATTRIBUTES

**Q:** I have a word-processor that allows me to add comments to my files and documents. Are these extended attributes?

**A:** Extended Attributes (EAs) are a file-system construct that allows data to be attached to files, but aren't actually part of the file itself. Many parts of the operating system use EAs to store specific informa-

tion. A good example is the OS/2 Workplace Shell, which uses EAs to store object information.

Some programs choose to store information, such as comments, to a document in a word-processor as a part of the data file itself, or they can choose to store this extra information in EAs. The application determines how and where this extra information is stored.

Note that DOS and Windows applications do not use EAs because their native environments do not have any type of EA construct. Therefore, any comments or extra data being stored by DOS and Windows programs must be part of the data file itself. Only native OS/2 applications use EAs.

### THINKPAD UPDATES

**Q:** Where can I find the latest code for the IBM Thinkpad series?

**A:** By code I assume you mean the audio, video, and utility features for the Thinkpads. BIOS and reference partition code updates have been made as well. (The Thinkpad 750 has a RAM loadable BIOS and other models have reference partitions on the hard disk.)

You can find these updates on a regular basis, or learn when new ones become available, in several places. IBM has a bulletin board system available. Other than the phone call, it is free of charge. You can reach the PCCBBS at (919) 517-0001. This system is run by the IBM Personal Computer Company and, in case you have any questions about the latest code, rest assured this system has the latest information. You can also obtain information and code from CompuServe in the Thinkpad forum. Type GO THINKPAD at a CompuServe prompt to access this section. The code is usually maintained in the libraries of this forum.

If you are having problems, it is important to get the latest code as



many of the most common problems, such as suspend/resume on the Thinkpad 750C are resolved by the newer code.

### COM PROBLEMS

**Q:** I'm having some problems with serial communications. I'm not sure if the COM port driver is installing properly. How can I tell if the port of my communications program is causing the problem?

**A:** You can tell if a communications program is causing the problem or if the port is simply not responding to the program by testing the port using the **mode** command. Many people think the **mode** command is only used to set the number of lines, columns, and colors in a command-prompt window or full screen. The **mode** command can set or query the mode of a device, such as the display, or a port, such as the COM port.

To see if the COM port is responding and if the driver is loaded properly, simply open an OS/2 command prompt, and enter **MODE COMx <Enter>**.

The **x** in this command refers to the COM port you wish to query. If you get a pop-up window with a message that the COM port is not ready, you know you need to fix something with the hardware or the driver. If you see information about the baud rate and so on, you know the driver and the port are set up and loaded properly. You should then check your communications program and its settings.

### CLIPBOARD

**Q:** I have placed data from an application into the clipboard. Can I append other data from another application before pasting it to the destination? Does it depend on the application?

**A:** No applications have native ability to append data to the clipboard while leaving the current data in the clipboard intact. When data is written to the clipboard, the previous contents are erased. There is nothing you can do about it.

It is possible, however, for a programmer to append data to the current contents of the clipboard, despite the fact that OS/2 does not offer it as a programmer option.

A programmer could offer an append option to the user and, if chosen, the application could read the contents of the clipboard, append that data in his own memory and then write the new combined data back to the clipboard. Doing so, however, probably makes sense only if the data, currently stored in the clipboard, is of the same format as the data that is to be appended. It does not make sense to append metafile data to text data. Assuming the programmer of an application wanted to do it, it is possible.

### S3 VIDEO CHIPS

**Q:** OS/2 2.1 does not have support for S3 boards. Where can I get it?

**A:** OS/2 2.1 does not contain the video drivers needed to exploit the S3 chipsets, however, this support is available. If you have OS/2 2.1, you can get the S3 drivers for the 801, 805, and 928 chips from the IBM support libraries on CompuServe. A file exists in the OS2SUP forum in Library 17 named *s3\_16m.dsk* that is a disk image that has the S3 driver for the aforementioned chips with the necessary support files and installation instructions. You will also need the file *loaddf.zip* from Library 17 that enables you to make an actual disk from the *.dsk* image file.

This package is only needed if you have OS/2 2.1. If you have OS/2 2.11 or OS/2 for Windows, you'll find the S3 drivers in the

package and shouldn't try to install this *s3\_16m.dsk* package.

These drivers will enable you to run your S3 board at resolutions up to 1,280x1,024x256, 1,024x768x256, 800x600x65,536 (64k), or 640x 480x16 million color modes.

### WRITING TO CD

**Q:** I have an application that I run from a CD-ROM. When I execute the application, I get a message telling me that it cannot write to the disk. I assume that the manufacturers of this application would know that users can't write to a CD-ROM. What am I doing wrong?

**A:** Often, applications need to write to temporary files in their course of execution. If you don't have an environment variable set that tells the application where to put the temporary files, it may try to put them in the current directory, which, in your case, is probably the CD-ROM drive.

Try editing your *config.sys* file and adding the following two lines, if you don't have TEMP (or TMP) variable lines in there already:

```
SET TEMP = X:\temp
SET TMP = X:\tmp
```

X: represents the drive on which you wish to put temporary files. Be sure you have created the *x:\tmp* and *x:\temp* subdirectories on these drives, as not having done so may be the source of your problems, if the variable is set, but the subdirectory specified in the environment variable does not exist.

---

*David Reich, a contributing editor to OS/2 Magazine and author of Designing OS/2 Applications, has been with the OS/2 development team since 1987. David is interested in your questions and suggestions. Contact him at CompuServe 76711,632 or Internet speedracer@vnet.ibm.com.*



# PCMCIA drivers, Extended Attributes, Novell and More...

WHAT YOU PLUG INTO AND PULL OUT OF YOUR MACHINE BY DAVID REICH

## PCMCIA

**Q:** PCMCIA confuses me; all I know about it is that it allows the use of credit-card sized adapters. Can OS/2 use PCMCIA cards?

**A:** OS/2 has PCMCIA support built in. However, you should understand some aspects of PCMCIA before jumping in.

PCMCIA is the new emerging standard for laptop computers that use internal adapters, such as modems and network cards. These cards are the credit-card sized adapters you mentioned. The way this standard is implemented requires that you understand how the device drivers are layered, and where each one comes from. Then you can see what OS/2 supplies and how to use it.

PCMCIA support is structured in three layers. At the base, or computer-system level is Socket Services. Support for this feature is provided by the computer manufacturer. Each manufacturer of a PCMCIA-enabled computer must supply Socket Services specific to that computer.

The next piece is Card Services. Support for this feature is provided by the operating system—in this case, OS/2. The file name is *pcmcia.sys*. When you installed OS/2 (assuming you asked for PCMCIA support), it installed Card Services.

## PCMCIA is the new emerging standard for laptop computers that use internal adapters

The final piece of the PCMCIA puzzle is the card driver. These drivers are specific to each PCMCIA card. For example, you cannot use the card driver from one PCMCIA modem card with a different manufacturer's card.

Now that you have the PCMCIA basics down, you might be wondering how all this fits with OS/2. When you install OS/2, if you plan to use PCMCIA cards (you actually could do this later, through Selective Install), select the item on the install window for PCMCIA support. This action will place the file *pcmcia.sys* on your hard disk and add the appropriate line into *config.sys*. Now the Card Services from OS/2 are installed.

The next step is installing the Socket Services. Even though this code is supplied by the computer manufacturer, you can't install it before OS/2 (where would you put the device driver statements?). To continue, you will need to find the Socket Services drivers that came

with your computer and use the installation program to copy the files and have the appropriate statements placed in *config.sys*, if necessary.

Now that you have installed Socket and Card Services, the final step is installing the card driver. Again, installation is manufacturer-dependent. Some cards, such as the IBM PCMCIA Token Ring Adapter, have an installation program that copies the file(s) and updates *config.sys* appropriately. Others may only have a set of instructions. You should note that for the card driver to work under OS/2 it must be OS/2-specific. Most PCMCIA card manufacturers ship the DOS card driver with the card. Some may also include the OS/2 driver. Be aware that in some cases you may need to contact the manufacturer to get the OS/2 version of the card driver.

OS/2 can, in fact, use PCMCIA cards. Installation of the layers of drivers can be a little intimidating, but it really is no different under OS/2 than it is under DOS.

## PCMCIA PROBLEMS

**Q:** I've followed all of the instructions for installing PCMCIA drivers, but I can't get my modem to work. Do you have any suggestions?

Tips & Tricks cont'd on p. 76



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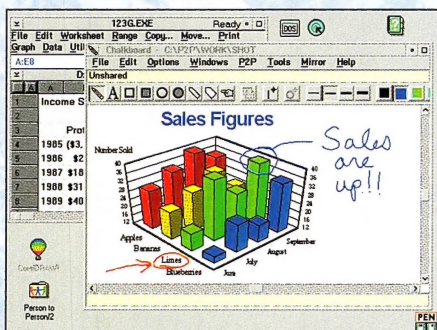
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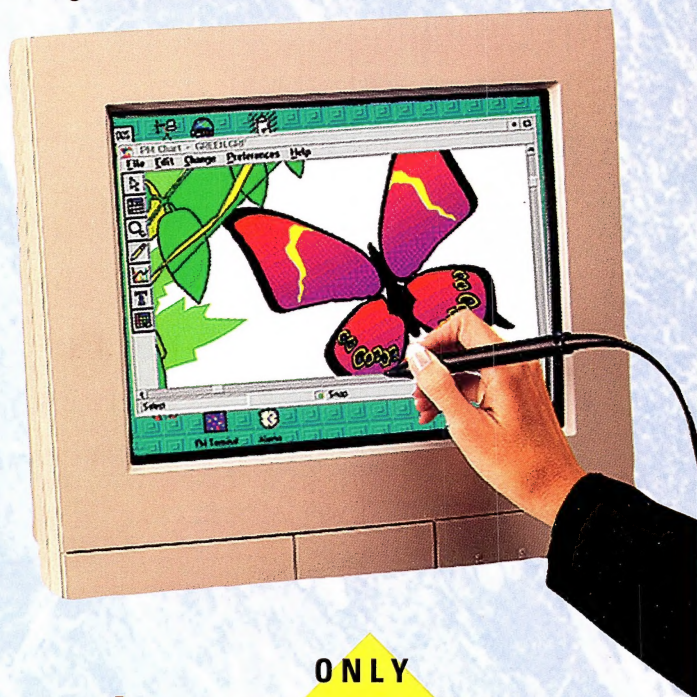
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# Maybe You Can't Be In Six Places At Once...

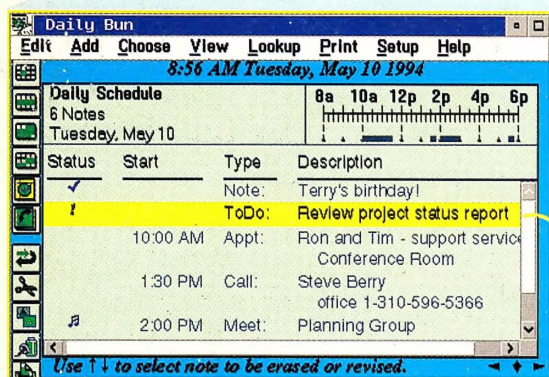
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